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FINAL DETAILED REPORT FOR THE EVALUATION OF THE MUNICIPAL HEALTH SERVICES PROGRAM DEMONSTRATIONS

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EXECUTIVE SUMMARY

The Municipal Health Services Program (MHSP) Demonstration was implemented in 1978 as an effort to improve access to health care in medically underserved urban areas. The objective was to help cities build upon their existing public health resources to develop or strengthen networks of community clinics to provide primary and preventive health care services to the inner-city poor. The program was established in five cities with funding from the Robert Wood Johnson Foundation and was supported by Medicare and Medicaid waivers from the Health Care Financing Administration (HCFA). Foundation support ended in 1984, but HCFA has continued to grant the Medicare waivers in four of the cities, under Congressional mandates. The program has thus evolved into a demonstration limited to Medicare beneficiaries. The four cities participating in the demonstration are Baltimore, Cincinnati, Milwaukee, and San Jose.

The Omnibus Budget Reconciliation Act of 1989 extended the MHSP Medicare waiver through December 1993 and required the Secretary of the Department of Health and Human Services to "submit a report to Congress on the waiver program with respect to the quality of health care, beneficiary costs, and such other factors as may be appropriate." HCFA contracted with Mathematica Policy Research, Inc. and its subcontractor, SysteMetrics, to conduct an evaluation of the MHSP Demonstration. This report presents the findings of that evaluation.

A. BACKGROUND

The Medicare waivers granted under the MHSP Demonstration eliminated the Part B deductible and coinsurance for services provided at MHSP clinics, expanded the range of services covered at the clinics, and provided for full reimbursement of the reasonable costs of MHSP services. The expanded benefits covered under the Medicare waiver include preventive care, prescription drugs, dental care, dentures, podiatry, optometry, eyeglasses, and a variety of other services. Except for eyeglasses, which have a 50 percent coinsurance rate, these services are available to Medicare beneficiaries free of charge. Eligibility for MHSP services is not contingent upon income. Medicare beneficiaries who use MHSP clinics are permitted to obtain care outside the clinics, but are subject to the standard Medicare Part B deductible and coinsurance when they do so.

In 1990, the total cost to Medicare for services provided under the demonstration was $34.8 million. Of that total, $11.9 million (34 percent) was for pharmacy services, $9.8 million (28 percent) was for dental services and dentures, and $5.4 million (15 percent) was for routine physician services. The remaining $7.6 million (22 percent) was for such other ancillary services as laboratory, radiology, podiatry, and optometry services. The composition of Medicare costs for MHSP services has changed dramatically since the early years of the program, as costs for pharmacy, dental, and other ancillary services have grown faster than costs for routine physician services throughout the 1980s. In 1981, when the total cost to Medicare of MHSP services was $2.2 million, 34 percent of the total was for routine physician services, 30 percent was for dental services and dentures, 12 percent was for pharmacy services, and 25 percent was for other ancillary services.

B. EVALUATION OBJECTIVES AND RESEARCH DESIGN

This evaluation had four objectives: (1) to document the organization and operations of the MHSP Demonstration in each city, (2) to assess the effects of the demonstration on service use and Medicare costs, (3) to determine whether the MHSP clinics are providing care of acceptable quality, and (4) to project Medicare MHSP costs through the end of the demonstration.

To document the organization and operations of the demonstration in each city, we conducted in-depth case studies based on information collected through on-site interviews with relevant program staff in each city and a review of quantitative program data, including MHSP cost reports. We assessed the effects of the demonstration on service use and Medicare costs by comparing the use and cost experience of MHSP patients with that of a matched comparison group of beneficiaries who do not use the MHSP clinics. The comparison group was selected from the service areas of the MHSP clinics, and was selected such that the distribution of the comparison group by race matched that of MHSP patients. This was designed to help achieve comparability between the two groups in socioeconomic status, the availability of health care providers, prevailing health care prices, and local practice patterns. We also used statistical methods to control for differences between the two groups in demographic characteristics and other factors associated with the need for care. The analysis used data from the Medicare enrollment file, MHSP claims and cost reports, and claims submitted under the regular Medicare program.

Our assessment of the quality of care provided by MHSP clinics was based on a review of the medical records of a sample of MHSP patients. We evaluated the process of care at MHSP clinics to determine whether it meets established clinical standards. The criteria developed for the medical record review included an assessment of drug prescribing and monitoring activity, the general aspects of patient care, and care for four chronic conditions. Specially-trained registered nurses reviewed each record to identify potential quality of care problems. Cases with potential quality of care problems were referred to primary care physicians for a final review. To provide a context for interpreting the findings, they were compared with the findings from a similar review of the process of care provided to a national sample of Medicare HMO enrollees. Finally, the projections of future Medicare costs under the MHSP Demonstration were based on previous trends in Medicare costs for each service offered under the demonstration as determined from MHSP cost reports submitted to HCFA.

C. FINDINGS

The four cities have developed distinctive programs which differ significantly in organization, scale, and character. Baltimore has developed a much larger program than the other cities. In 1990, total Medicare expenditures for MHSP services were $34.82 million, of which $22.73 million (or 65.3 percent) went to Baltimore, $7.35 million (21.1 percent) went to San Jose, $3.45 million (9.9 percent) went to Milwaukee, and $1.29 million (3.7 percent) went to Cincinnati. These differences across cities in MHSP costs reflect differences in the number of patients served, as well as differences in service volume and the range of services offered.

One of the significant differences across cities is the composition of patients at the MHSP clinics. Medicare beneficiaries comprise a much higher percentage of the total patient load at the MHSP clinics in Baltimore than in the other cities. At the largest clinic in Baltimore, which saw about 10,000 Medicare beneficiaries in 1990, Medicare beneficiaries account for about 95 percent of all medical visits. At the next two largest clinics in Baltimore, which each saw about 5,000

Medicare beneficiaries in 1990, Medicare beneficiaries account for over 85 percent of all medical visits. The largest MHSP clinics in Baltimore have thus focused primarily on the treatment of Medicare beneficiaries. At the opposite end of the spectrum is Cincinnati, where the MHSP has been integrated into a network of clinics that provide health care to low income residents of all ages. Medicare beneficiaries account for less than a quarter of all medical visits in the Cincinnati clinics. The Cincinnati clinics reportedly are treating growing numbers of uninsured patients, through funding sources other than the MHSP. The largest MHSP clinic in Cincinnati saw about 900 Medicare patients in 1990.

Our analysis of the service use patterns of MHSP patients found that about 39 percent of MHSP patients are using the clinics only for such ancillary services as dental care and optometry. In 1989, the average cost of MHSP services provided to such beneficiaries was $469, of which $364--or 78 percent--was for dental services and dentures. Many of these beneficiaries are obtaining physician services from non-MHSP providers and few have had any past encounters with MHSP physicians. In 1989, beneficiaries who used the MHSP for ancillary services only accounted for 18.6 percent of the total costs of the demonstration to Medicare.

Using the MHSP clinics for such ancillary services as dental care while obtaining physician services elsewhere is not prohibited by the demonstration rules. The coverage for a broad array of ancillary services was initially intended, however, to help attract low income beneficiaries to the clinics as their regular source of primary and preventive medical care. The finding that significant numbers of beneficiaries are using the MHSP clinics for dental care and other ancillary services while obtaining physician services only from non-MHSP providers suggests that the demonstration may not be effectively targeted to beneficiaries who do not have access to primary medical care.

Determining the effects of the MHSP Demonstration on service use and Medicare costs is difficult because the demonstration has been operational for over ten years and was not based on a randomized experimental design. Based on the comparison-group methodology described above, we estimate that in 1989 the demonstration increased Medicare expenditures by $440 per beneficiary among MHSP patients who used MHSP physician services and by $500 per beneficiary among those who used the MHSP for ancillary services only. These correspond to increases of 10 percent and 15 percent in Medicare expenditures, respectively, for the two segments of the MHSP patient population. These estimates imply each dollar spent by the Medicare program on MHSP services in 1989 resulted in a net increase in Medicare program expenditures that year of 47 cents.

The review of medical records obtained from MHSP clinics found one or more quality of care problems in 37 percent of the cases reviewed. Eight percent of the problem cases were classed as severity level 1, representing medical mismanagement without the potential for significant adverse effects on patients, while 92 percent were classified as severity level 2, representing medical mismanagement with the potential for significant adverse effects. No problems were classified-as severity level 3--that is, major problems with observable, significant adverse impacts on patients. The rate of quality of care problems among MHSP patients was significantly higher than the rate found for the comparison sample of Medicare HMO enrollees.

It is important to note that these findings reflect only information about the process of care that is evident in medical records maintained by the sites. To some extent, apparent quality problems are likely to be attributable to incomplete documentation in the medical record and/or differences in medical judgement among clinicians, and/or may not be indicative of the overall process of care for clients who received some services outside the MHSP clinics. Also, as an assessment of the process of care, measures of actual health outcomes or patient satisfaction are not reflected in the

findings. Detailed documentation on each apparent quality problem will be shared with the MHSP sites, so they can assess the actual extent of quality concerns and develop corrective actions where necessary.

The projection of future Medicare costs under the MHSP Demonstration was based on past trends over the period 1985 to 1990. (More recent baseline data were not used because the MHSP cost reports for more recent years have not been settled.) From 1985 to 1990, Medicare costs under the demonstration increased from $14.6 million in 1985 to $34.8 million in 1990. Based on past trends for each type of MHSP service, total Medicare costs for MHSP services are expected to reach $46.1 million in 1993. Applying our estimates from the cost-effectiveness analysis to this projection, we estimate that the MHSP Demonstration will result in a net increase in total Medicare expenditures in 1993 of $21.7 million.

I. INTRODUCTION

The Municipal Health Services Program (MHSP) was established in 1978 in five cities to improve access to ambulatory health care in underserved urban areas by creating or expanding networks of community clinics. The program sought to substitute MHSP clinics for hospital emergency rooms and outpatient departments as a source of primary care for the urban poor, and to increase the continuity of care and the amount of preventive care provided to the low income population. It was hoped that these changes would reduce health care costs. The demonstration was originally funded by grants from the Robert Wood Johnson Foundation (RWJF) and co-sponsored by the U.S. Conference of Mayors and the American Medical Association, and was supported by Medicare and Medicaid waivers granted by the Health Care Financing Administration (HCFA). RWJF funding ceased in 1984, but HCFA has continued to grant the Medicare waivers in four of the cities, under congressional mandates. The Omnibus Budget Reconciliation Act of 1989 (OBRA 89) extended the waivers through 1993.

Two evaluations of the MHSP demonstration were conducted in the early 1980's, one by a team at Columbia University and the other by a team at the University of Chicago. OBRA 89 required the Department of Health and Human Services to conduct a new evaluation and "submit a report to Congress on the waiver program with respect to the quality of health care, beneficiary costs, and such other factors as may be appropriate." This final report presents the findings of that evaluation. Other reports prepared under this evaluation include a summary version of this final report (Nelson et al. 1993) and an in-depth case study of the organization and operations of the MHSP in each city (Wright et al. 1992). The findings of the case study are summarized in this report and the summary final report, along with the findings of other components of the evaluation.

A. ORIGIN AND GOALS OF THE MHSP DEMONSTRATION

The MHSP was designed to help cities use their existing public health resources as the nucleus of a coordinated system to provide community-based health care to the underserved urban poor. The program sought to expand the provision of primary and preventive health care services by municipal

health clinics, and to link these clinics with local public hospitals in order to provide a continuum of outpatient and inpatient care. The program also sought to substitute community-based care for the more fragmented and more costly care available at hospital emergency rooms and outpatient departments. Those who initiated the program hoped that improved access to comprehensive primary and preventive care would reduce health care costs.

The nation's 50 largest cities were invited to submit proposals to participate in the demonstration, Twenty-eight cities submitted proposals, and in June 1978 five were selected: Baltimore, Cincinnati, Milwaukee, St. Louis, and San Jose. The selection of cities was based primarily on an assessment of the feasibility and likely success of their proposals to build on their existing public health care systems to broaden access to ambulatory care for the underserved urban poor. The sponsors sought to achieve geographic diversity for the demonstration, selecting no more than one city from a given state. They also sought to include at least one city with a large Hispanic population in the targeted service area (Ginzberg et al. 1985).

Beginning in 1978, RWJF provided $3 million in grants for planning and start-up costs to each city over five years. These temporary grants were intended to help the cities restructure their public health care delivery systems so that the MHSP clinics could achieve financial viability by the end of the five-year demonstration (Ginzberg et al. 1985). It was anticipated that this would be achieved in part through local government -action to reallocate funding and personnel from public hospitals to the MHSP clinics, corresponding with the expected shift of ambulatory patients. To achieve that objective, RWJF required a strong commitment to the MHSP from high-level city officials, including the mayor.' In addition, it was hoped that the clinics would serve not only the indigent but also privately insured patients and others able to pay a portion of the costs of their care. RWJF required the clinics to implement billing and collection procedures for such patients. RWJF imposed the following additional requirements:

'Co-sponsorship of the demonstration by the U.S. Conference of Mayors was designed to help assure the active interest and participation of high-level city officials.

- The MHSP clinics were to be located in neighborhoods with a documented need for health services.
- Each city was to develop formal linkages between the MHSP clinics and their public hospitals.
- Each city was to offer a full range of services at three or more clinics.
- The clinics were to provide general medical and preventive services for a minimum of 50 hours per week.
- The clinics were to provide coordinated 24-hour emergency care.
- The clinics were to be available to paying and non-paying patients of all ethnic and racial backgrounds.

Seven MHSP clinics were operational in the first year of the demonstration. Six of these were pre-existing facilities which expanded their staff, services, and/or hours for the demonstration. The pre-existing facilities included public health department clinics which had previously provided preventive services and maternal and well-baby care, free-standing Community Health Centers, and ambulatory centers operated by public hospital outpatient departments. By the fifth year of the demonstration, 19 MHSP clinics were operational. Ten of these were pre-existing facilities and nine were new delivery sites.

RWJF established performance requirements for the grants which created financial incentives to improve the productivity of the clinics. Productivity guidelines required that the clinics have 4,500 visits per year for each full-time physician, and 2,250 visits per year for each full-time physician assistant or nurse practitioner. The RWJF funds were not automatically released to the cities, but payments were contingent upon increases in the total number of visits and increases in provider productivity. Furthermore, the cost per visit could not exceed two-thirds of the cost of an outpatient visit at the local public hospital.

In 1979, HCFA supported the MHSP by granting waivers of Medicare and Medicaid regulations governing benefit coverage and reimbursement methods. HCFA's decision to enter the demonstration was motivated by a desire to improve access to high quality primary care for low-income Medicare and Medicaid beneficiaries, and to reduce total medical expenditures for such individuals by reducing their use of emergency room services, hospital outpatient services, and inpatient services. The Medicare

waivers eliminated the Part B deductible and coinsurance for services provided at MHSP clinics, expanded the range of Part B services covered at the clinics, and provided full reimbursement for the reasonable costs of MHSP services. The expanded benefits covered under the Medicare waiver include preventive care, prescription drugs, dental services, dentures, podiatry, optometry, eyeglasses. and various other services. Except for eyeglasses, which have a 50 percent coinsurance rate, these services are available to Medicare beneficiaries free of charge. Eligibility for MHSP services is restricted to Medicare beneficiarieswho are city residents enrolled in Medicare Part B; eligibility is not contingent upon income. Medicare beneficiaries who use the MHSP clinics are permitted to obtain care outside the clinics, but are subject to the standard Part B deductible and coinsurance when they do so.

The Medicaid waivers were authorized by HCFA but implemented only in response to formal waiver requests from the states. The states were authorized to request waivers that would permit reimbursement of MHSP clinics on a reasonable cost basis and coverage of additional services at the clinics. Four of the five states submitted Medicaid waiver requests to **HCFA,** and these were subsequently approved. California and Missouri requested only a change to cost-based reimbursement, while Maryland and Wisconsin also requested coverage for additional services. Ohio, which was already paying public health clinics on a reasonable cost basis, declined to participate in the Medicaid waiver program.

B. EVOLUTION AND CURRENT STATUS OF THE MHSP DEMONSTRATION

RWJF's participation in the MHSP demonstration ended in 1984. The Medicare waivers were scheduled to end in December 1984, but HCFA agreed to a one-year extension in response to a request from the U.S. Conference of Mayors. As a condition for granting this extension, HCFA required the cities **to** submit proposals to convert the MHSP to a **capitated,** risk-based reimbursement system for Medicare Parts A and B by January 1986. HCFA required that these proposals comply with the requirements for Medicare health maintenance organizations **(HMOs)** contained in the Tax Equity and Fiscal Responsibility Act of 1982 **(TEFRA).** All cities except St. Louis submitted proposals in October 1984, but later informally requested that HCFA waive the TEFRA **"50/50** requirement" that Medicare and Medicaid enrollees constitute no more than 50 percent of an HMO's total enrollment. HCFA

refused that request, having taken a firm policy decision against granting such exceptions following the Medicare HMO demonstrations in the early 1980s.[2]

In 1985, the four cities entered into negotiations with local HMOs to try to combine the MHSP clinics with delivery systems already experienced with capitation. However, the cities did not believe they would be able to satisfy the TEFRA 50/50 rule by January 1986 as required by HCFA. The cities persuaded Congress to include a provision in Public Law (PL) 99-190 that extended the Medicare waiver through December 1986. This extension maintained the cost-based reimbursement system for the MHSP and did not require conversion to capitation. Congress subsequently included a provision in PL 99-272 extending the Medicare waiver through December 1989, and OBRA 89 extended the waiver through December 1993. OBRA 89 also mandated an evaluation of the waiver program. Table I.1 summarizes the chronology of the MHSP.

The removal of RWJF funding in 1984 and subsequent extensions of the Medicare waiver have transformed the MHSP into a Medicare-only demonstration. The program was originally designed to help the cities expand access to primary and preventive health care services to inner city residents of all ages, and in the early years of the program, MHSP clinics focused on providing care to children. Fleming et al. (1986) report that in the early 1980s, 49 percent of MHSP patients were under 17 years of age and only 11 percent were over 65 years of age.[3] As the MHSP has evolved into a Medicare-only demonstration, however, the participating clinics in some cities have shifted their focus toward the Medicare population. In 1990, Medicare beneficiaries accounted for 73 percent of all visits to MHSP clinics in Baltimore, 51 percent of all visits in Milwaukee, 35 percent of all visits in San Jose, and 24 percent of all visits in Cincinnati.

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[2]The TEFRA 50/50 requirement is intended to help ensure that Medicare HMOs meet acceptable standards for quality of care, by limiting participation in the Medicare market to HMOs that have attracted significant numbers of enrollees in the private-pay market.

[3]These findings were derived from a survey conducted in the service area of one MHSP clinic in each of the five original cities.

TABLE I.1

CHRONOLOGY OF THE MHSP

1977	RWJF announces its intention to sponsor the MHSP demonstration and solicits grant proposals from the nation's 50 largest cities. The U.S. Conference of Mayors and the American Medical Association co-sponsor the demonstration.
1978	RWJF selects five cities for the demonstration and awards each $3 million in grants over a five-year period. The purpose of the grants is to help the cities build on and restructure their existing public health care delivery systems to improve access to primary care for the inner-city poor.
1979	Following a Memorandum of Agreement between RWJF and HCFA, HCFA grants Medicare waivers for the period from July 1, 1979 through December 31, 1984, providing 100 percent cost-reimbursement for the reasonable costs of expanded Medicare Part B services at MHSP clinics. HCFA also authorizes the states to apply for Medicaid waivers. Four of the five states apply for Medicaid waivers, which are subsequently approved by HCFA.
1984	RWJF funding for the demonstration ends. The Medicare waivers are scheduled to end on December 31. HCFA agrees to extend the waivers provided that the cities submit plans for converting to capitated reimbursement by January 1986. Four cities submit proposals for converting to Medicare capitation contracts (St. Louis declines).
1985	The clinics anticipate difficulty in meeting the TEFRA requirement that prepaid plans not have more than 50 percent enrollment of Medicare and Medicaid patients. HCFA refuses to relax this standard. The sites do not make a formal request to change the requirement. Instead, they successfully seek passage of legislation (PL 99-190) in December to continue the Medicare waivers through December 31, 1986.
1986	Congress passes legislation in April (PL 99-272) extending the demonstration three additional years to December 31, 1989.
1989	OBRA 1989 extends the demonstration through December 31, 1993 and mandates an evaluation.

SOURCE: Ginzberg et al., (1985), Robert Wood Johnson Foundation (1986), and personal communication with HCFA staff.

There are currently 14 MHSP clinics: five in Baltimore, four in San Jose, three in Cincinnati, and two in Milwaukee. The scale of the demonstration varies significantly across cities. Of the 38,166 Medicare beneficiaries who received services at MHSP clinics in 1990, 24,021 (62.9 percent) lived in Baltimore, 7,728 (20.2 percent) lived in San Jose, 4,805 (12.6 percent) lived in Milwaukee, and 1,612 (4.2 percent) lived in Cincinnati. These differences across cities in the number of Medicare patients served by the MHSP, as well as differences in service volume and the range of services offered, have resulted in substantial differences across cities in Medicare MHSP expenditures. The total Medicare expenditure for MHSP services in 1990 was $34.82 million, of which $22.73 million (or 65.3 percent) went to Baltimore, $7.35 million (21.1 percent) went to San Jose, $3.45 million (9.9 percent) went to Milwaukee, and $1.29 million (3.7 percent) went to Cincinnati.

The composition of Medicare expenditures for MHSP services has changed significantly since the early years of the program. In 1981, total Medicare expenditures for MHSP services were about $2.25 million, of which 34 percent was for routine care, 30 percent was for dental care, 12 percent was for pharmacy services, and 25 percent was for other ancillary services (see Tables I.2 and I.3).[4] Since that time, expenditures for pharmacy, dental, and other ancillary services have each grown faster than expenditures for routine care. Pharmacy services have exhibited the fastest growth in expenditures, increasing at an average annual rate of 67 percent between 1981 and 1985 and an average annual rate of 23 percent between 1985 and 1990. Consequently, in 1990 pharmacy services accounted for a higher share of total Medicare MHSP expenditures than any other service. Of the $34.82 million in Medicare MHSP expenditures in 1990, 34 percent was for pharmacy services, 28 percent for dental services, 22 percent for other ancillary services, and 15 percent for routine care.

C. PREVIOUS EVALUATIONS OF THE MHSP DEMONSTRATION

Previous evaluations of the MHSP focused on the experience of the demonstration in the early 1980s--before it was transformed into a Medicare-only demonstration. Researchers at the Conservation

[4]Routine care includes the services provided by physicians and physician extenders, but does not include such ancillary services as laboratory or radiology.

TABLE 1.2

GROWTH OF MEDICARE MHSP EXPENDITURES, FY 1981 - FY 1990

	Medicare MHSP Expenditures[1]			Annualized Percent Change[4]	
	FY 19812	FY 1985	FY 1990[3]	FY81-FY85	FY85-FY90
Total Expenditures					
Baltimore	$488,691	$8,735,461	$22,728,735	72.1 %	19.1 %
Cincinnati	75,542	680,960	1,286,024	55.0	12.7
Milwaukee	531,204	2,105,038	3,454,059	34.4	9.9
San Jose	1,153,338	3,045,332	7,354,165	24.3	17.6
Total	2,248,775	14,566,791	34,822,983	46.7	17.4
Routine Care[5]					
Baltimore	201,164	2,228,713	2,630,787	60.1	3.3
Cincinnati	51,077	219,206	394,329	36.4	11.7
Milwaukee	242,905	402,977	636,594	12.7	9.1
San Jose	278,223	793,407	1,707,579	26.2	15.3
Total	773,369	3,644,303	5,369,289	38.8	7.8
Pharmacy Services					
Baltimore	73,046	$944,654	8,042,933	82.0	28.4
Cincinnati	20,856	206,912	415,187	57.4	13.9
Milwaukee	37,645	786,253	1,273,583	76.0	9.6
San Jose	128,635	780,313	2,217,617	45.1	20.9
Total	260,182	3,718,132	11,949,320	66.5	23.3
Dental Services and Dentures					
Baltimore	95,408	2,703,442	6,787,303	83.6	18.4
Cincinnati	748	149,942	286,480	132.5	12.9
Milwaukee	120,971	476,403	547,431	34.3	2.8
San Jose	446,610	873,459	2,227,376	16.8	18.7
Total	663,737	4,203,246	9,848,590	46.1	17.0
All Other Services					
Baltimore	119,073	1,858,652	5,267,712	68.7	20.8
Cincinnati	2,861	104,900	190,028	90.1	11.9
Milwaukee	129,683	439,405	996,451	30.5	16.4
San Jose	299,870	598,153	1,201,593	17.3	14.0
Total	551,487	3,001,110	7,655,784	42.4	18.7

SOURCE: MHSP Medicare Cost Reports as of October 7, 1992.

'Excludes St. Louis, which left the program in FY 1985. St. Louis expenditures were $450,796 in FY 1981 and $769,521 in FY 1985. All figures are unadjusted for inflation.

*Expenditure data from FY 1979 and FY 1980 were excluded because expenditures were relatively small, making rates of change from those years so high as to be of limited value. Total expenditures, excluding St. Louis, were $46,213 in FY 1979 and $1,038,607 in FY 1980.

[3]FY 1990 cost reports have not been settled.

[4]Represents an average annual compounded fate of growth.

'Routine care includes services provided by physicians and physician extenders, but does not include laboratory, radiology, pharmacy, or other services.

TABLE I.3

COMPOSITION OF MEDICARE MHSP EXPENDITURES,
FY 1981 - FY 1990

	FY 1981	FY 1985	FY 1990
All Cities'			
Routine care[2]	34.4 %	25.0 %	15.4 %
Pharmacy services	11.6	25.5	34.3
Dental services and dentures	29.5	28.9	28.3
All other services	24.5	20.6	22.0
Baltimore			
Routine care	41.2	25.5	11.6
Pharmacy services	14.9	22.3	35.4
Dental services and dentures	19.5	30.9	29.9
All other services	24.4	21.3	23.2
Cincinnati			
Routine care	67.6	32.2	30.7
Pharmacy services	27.6	30.4	32.3
Dental services and dentures	1.0	22.0	22.3
All other services	3.8	15.4	14.8
Milwaukee			
Routine care	45.7	19.1	18.4
Pharmacy services	7.1	37.4	36.9
Dental services and dentures	22.8	22.6	15.8
All other services	24.4	20.9	28.8
San Jose			
Routine care	24.1	26.1	23.2
Pharmacy services	11.2	25.6	30.2
Dental services and dentures	38.7	28.7	30.3
All other services	26.0	19.6	16.3

SOURCE: MHSP Medicare cost reports as of October 7, 1992. FY 1990 cost reports have not been settled.

'Excludes St. Louis, which left the program in FY 1985.

[2]Routine care includes services provided by physicians and physician extenders but does not include laboratory, radiology, pharmacy, or other services.

of Human Resources (CHR) at Columbia University documented the implementation of the MHSP in each city and examined the political, institutional, and economic factors that affected program implementation and operation (Ginzberg et al. 1985). Researchers at the Center for Health Administration Studies (CHAS) at the University of Chicago conducted a second evaluation, which assessed the effects of the program on access to care and the costs of care (Fleming and Andersen 1986; Fleming et al. 1987).

1. The CHR Evaluation

The CHR evaluation, using a case study and process analysis methodology, concluded that the MHSP demonstration achieved some, but not all, of its objectives. The cities achieved the major objective of the demonstration, which was to establish a network of municipal health clinics to provide a comprehensive set of preventive and therapeutic services to the inner-city poor. In fact, each city exceeded the minimum requirement of three MHSP clinics set by RWJF. Under the demonstration, some clinics which had previously provided only preventive services or a limited range of services--such as maternal and child health care-were transformed into comprehensive health care facilities. In addition, nine new clinics were operational by the fifth year of the demonstration. The MHSP clinics attracted significant numbers of patients, with the annual number of visits to the clinics increasing from 100,000 in the first year of the demonstration to over 450,000 in the fifth year.

The evaluation concluded that, despite these successes, the demonstration did not achieve its objective of significantly reducing the role of hospital emergency rooms and outpatient departments in the provision of primary care. While some MHSP patients had previously received care at hospital emergency rooms and outpatient departments, the demonstration had little apparent effect on the total utilization of these facilities for primary care. In addition, the financial viability of the MHSP clinics was in doubt at the end of the demonstration, when the RWJF grants ended. In the final year of the demonstration, the MHSP clinics were heavily dependent on revenues from the Medicare waiver and the temporary RWJF grants. The cities did not reallocate resources from public hospitals to MHSP clinics, as the demonstration sponsors had envisioned, and the clinics did not attract significant numbers of

privately insured patients and others able to pay a portion of their medical costs. The cities were limited in their ability to reallocate resources from public hospitals to MHSP clinics because control of the public hospital was outside the jurisdiction of the city government in four of the five cities. Ginzberg et al. observed that, "only the city of Baltimore met the conditions of governance postulated by the demonstration: a strong mayoralty and municipal control of the financing and delivery of health care for the poor and indigent. The remaining four cities did not fit the presupposed model" [p. 114]. The authors concluded that the long-term viability of the MHSP clinics would depend on political and economic support from their local governments after the demonstration.

2. The CHAS Evaluation

The CHAS evaluation was based on a survey of residents of the service area of one MHSP clinic in each of the five cities. One thousand families were surveyed in each city in the early 1980s, yielding data on approximately 2,500 individuals per city.[5] The survey contained questions designed to determine whether the MHSP achieved its goals of improving access to primary care while reducing the total costs of care.

The CHAS study concluded that the MHSP largely, but not totally, achieved its goal of reaching the types of patients that had been targeted. The MHSP clinics were located in areas which, compared with the nation as a whole, had higher percentages of low-income people, minority populations, people without a regular source of care, and people who used emergency rooms and outpatient departments as their regular source of care. Approximately one-third of MHSP patients reported that their regular source of care prior to the demonstration had been an emergency room or outpatient department, and nearly 20 percent previously had no regular source of care. However, nearly half of MHSP patients reported that they previously had a private physician as their regular source of care. Children comprised a significant proportion of MHSP patients at the time of the survey; nearly half of the patients were under age 17.

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[5] Patients of the MHSP clinics were oversampled because of the relatively low penetration rates of the clinics at the time of the study.

The MHSP clinics did not have a higher proportion of elderly or chronically ill patients than other area providers.

The CHAS evaluation found that the MHSP had no statistically significant effect on health care costs for the general population of MHSP patients or MHSP Medicaid patients, but found that the MHSP reduced costs for Medicare patients. The authors warned that this finding should be interpreted with caution, however, because the sample of MHSP patients contained only 192 Medicare beneficiaries across the five cities.[6] The CHAS researchers subsequently conducted another study of the effects of the MHSP on Medicare expenditures, this time using data from Medicare claims and the Medicare enrollment file (Fleming et al. 1987). This study had a much larger sample than the previous study (over 3,100 MHSP Medicare patients and over 11,000 comparison-group beneficiaries drawn from the MHSP service areas). This study concluded that the MHSP reduced Medicare program expenditures for MHSP patients by an average of 33 percent across the five cities. This estimated saving was driven by a large estimated reduction in expenditures for inpatient services and, to a much lesser extent, by an estimated reduction in expenditures for emergency room and hospital outpatient services. These reductions more than offset the increased expenditures for MHSP patients on physician services and ancillary services.

Both of the CHAS analyses were based on a nonexperimental design in which demonstration impacts were estimated by comparing the Medicare costs of MHSP patients with those of a comparison group that had received services from non-MHSP providers. There were significant differences between MHSP patients and the comparison group on demographic characteristics and prior Medicare costs which strongly suggested that MHSP patients would have had significantly lower average costs than the comparison group even in the absence of the demonstration. The authors attempted to control for such differences statistically, but we cannot be certain that those efforts were entirely successful. If they were not, the estimates generated by the study overstate the true cost-effectiveness of the MHSP Demonstration.

[6]The small number of Medicare beneficiaries in the survey sample used in this study reflected the relatively small proportion of Medicare beneficiaries in the MHSP patient population in the early years of the demonstration.

Evaluating the effects of the MHSP Demonstration on Medicare costs based on more recent experience is important for several reasons. First, the number of Medicare beneficiaries using MHSP clinics has increased significantly since the early 1980s, and the mix of patients may have changed also. Second, the composition of Medicare MHSP expenditures has changed significantly since the initial years of the demonstration, with pharmacy and dental costs now constituting about 62 percent of the total. This may have changed the cost-effectiveness of the demonstration for Medicare and may have affected the demonstration's ability to provide coordinated preventive and primary care to beneficiaries.

D. OBJECTIVES AND DESIGN OF THIS EVALUATION

This evaluation had four objectives: (1) to document the organization and operations of the MHSP in each city, (2) to evaluate the effects of the demonstration on service use and Medicare costs, (3) to determine whether the MHSP clinics are providing care of acceptable quality, and (4) to develop projections of future Medicare costs under the demonstration.

To document the organization and operations of the MHSP in each city, we conducted in-depth case studies based primarily on data collected through on-site interviews with relevant program staff in the first quarter of 1991. In each city, we interviewed the city MHSP administrator, the administrator and medical director of each clinic, and representatives of the department of health. We also interviewed administrators of local hospitals, MHSP financial and data processing staff, and providers at selected MHSP clinics. Telephone interviews were conducted with a representative of the medical society in each city. We also interviewed HCFA officials responsible for administering the MHSP Demonstration and officials of the Health Resources and Services Administration (HRSA), which provides funding to some of the MHSP clinics under the federal Community Health Center program. The case studies were also based on a review of quantitative program data, including MHSP cost reports.

We assessed the effects of the demonstration on service use and Medicare costs by comparing the use and cost experience of Medicare MHSP patients with that of a matched comparison group of beneficiaries who did not use the MHSP clinics. We selected the comparison group from the service areas of the MHSP clinics, to help achieve comparability between the two groups in socioeconomic status,

the availability of health care providers, prevailing health care prices, and local practice patterns. We also used statistical methods to control for differences between MHSP patients and the comparison group on factors associated with the need for health care. The analysis used data from the Medicare enrollment file, MHSP claims and cost reports, and claims submitted under the regular Medicare program.

Our assessment of the quality of care provided under the demonstration was based on a review of the medical records of a sample of MHSP patients. Our approach was to evaluate the process of care at the MHSP clinics to determine whether it meets established clinical standards. The criteria developed for the review of medical records included an assessment of the general aspects of patient care, care for four chronic conditions, and drug prescribing and monitoring activity. Specially-trained registered nurses reviewed each record to identify potential quality of care problems, and cases with suspected problems were referred to primary care physicians for a final review. To provide a context for interpreting the findings, they were compared with the findings from a similar review of the process of care provided to a national sample of Medicare beneficiaries enrolled in HMOs.

The projections of future trends in Medicare costs under the demonstration were based on previous trends in Medicare costs for each service offered under the demonstration as determined from data in the MHSP cost reports submitted to HCFA. Information from the case studies was also used to assess whether previous trends were likely to continue in the future.

E. ORGANIZATION OF THIS REPORT

This report contains six chapters. Chapter II summarizes the findings of the case studies, which are described in greater detail in Wright et al. (1992). Chapter III presents the findings of the analysis of the effects of the demonstration on service use and Medicare costs. Chapter IV presents the findings of the quality of care analysis, and Chapter V presents the projections of future Medicare costs under the demonstration. Chapter VI summarizes the key findings and discusses their implications.

II, DESCRIPTION OF THE MHSP DEMONSTRATIONS

This chapter describes the organization and operations of the MHSP Demonstration in each city. The information summarized in this chapter is derived from in-depth case studies which are documented in greater detail in Wright et. al. (1992). For each city, the case studies examined such issues as the historical background of the MHSP, the administration of the program, services offered, staffing levels and staff retention, funding sources, and financial stability. The case studies were based on information obtained through a series of three- or four-day site visits to each city during the first quarter of 1991. During each site visit, we interviewed the city MHSP administrator; clinic administrators, medical directors, and providers; representatives of the department of health; and local hospital administrators. Some respondents were telephoned after the site visit for clarification or additional data. In addition, we conducted telephone interviews with representatives of local medical societies and the Health Resources and Services Administration (HRSA), which provides limited funding to half of the MHSP clinics under the federal Community Health Center (CHC) program. We also interviewed HCFA staff responsible for administering the demonstration. In total, 89 persons were interviewed.

The description of the MHSP Demonstration in each city contained in the case study report and summarized in this chapter is based on information reported by the persons we interviewed and reflects the status of the demonstration at the time of the site visits. Where noted, updated information has been included based on comments received from the MHSP administrators in each city on the draft case study report. Some details may have changed over time, but the basic description in this chapter of the organization and operations of the demonstration in each city remains valid.

The four cities have developed distinctive programs which vary in organization, character, and size. The number of MHSP clinics ranges from two in Milwaukee to five in Baltimore. As shown

in Table 11.1, the scale of operations of the MHSP varies significantly across cities and across clinics within cities. The number of Medicare patients seen under the demonstration in 1990 ranged from 351 at Braxton Cann Health Center in Cincinnati to 10,015 at Washington Village Community Medical Center in Baltimore. In 1990, the three MHSP clinics which saw the largest numbers of Medicare patients were all in Baltimore, and the two which saw the smallest numbers of patients were both in Cincinnati.

A. THE BALTIMORE MHSP

The Baltimore MHSP is a much larger program than the MHSP in the other three cities, accounting in 1990 for over 60 percent of all Medicare patients seen under the demonstration and over 60 percent of the MHSP reimbursements from Medicare. The program is highly visible in the community. Medicare beneficiaries constitute a significantly higher proportion of the patient load of the MHSP clinics in Baltimore than of the MHSP clinics in the other cities.

1. Administration and Organization

The Baltimore MHSP is administered by the City Health Department. The role of MHSP Administrator within the Health Department is filled by the Assistant Commissioner for Nursing and Community Services. Five MHSP clinics operate in Baltimore. The largest, Washington Village Community Medical Center, is a wholly-owned subsidiary of the Bon Secours Baltimore Health Corporation, which is part of a nonprofit organization known as the Sisters of Bon Secours, an international community of Catholic women that owns and operates health care facilities throughout the United States. The other four MHSP clinics--Albert Witzke Medical Center, Brehms Lane Medical Center, Hollander Ridge Health Center, and Matilda Koval Medical Center--are part of Baltimore Medical Systems, Inc. (BMSI), a large multi-site CHC which receives funding from HRSA under Section 330 of the Public Health Service Act. BMSI also operates a fifth health center in Baltimore which is not in the MHSP Demonstration.

TABLE II.1

NUMBER OF MEDICARE MHSP PATIENTS AND MEDICARE REIMBURSEMENTS, BY CLINIC (1990)

MHSP Clinic.	Number of MHSP Medicare Patients in 1990	MHSP Medicare Reimbursement ir 1990
Baltimore		
Washington Village	10,015	$8,374,074
Brehms Lane	5,156	6,014,975
Albert Witzke	4,948	4,873,213
Matilda Koval	2,507	2,814,052
Hollander Ridge	1,034	771,491
Cincinnati		
Northside	901	595,410
Winton Hills	360	293,048
Braxton Cann	351	397,568
Milwaukee		
Johnston	2,517	2,122,335
Isaac Coggs	1,644	1,331,724
San Jose		
St. James	3,947	4,168,322
Chaboya	2,418	2,082,689
East Valley	826	802,162
Gardner	537	300,990

SOURCES: Data on the number of MHSP patients treated at each clinic were computed by HCFA from the MHSP claims. Data on MHSP Medicare reimbursements are from the MHSP cost reports as of October 7, 1992.

NOTE: The number of Medicare beneficiaries treated at each clinic includes those who used physician services as well as those who used the clinic only for such ancillary services as dental care and optometry services.

The MHSP operates under contracts between the city and the two organizations which operate the clinics--Bon Secours Hospital and BMSI. These two organizations have in turn negotiated numerous subcontracts for specialized services provided at the MHSP clinics, including pharmacy, dentistry, optometry, radiology, and podiatry. The prime contracts with the city are negotiated annually through the Board of Estimates, which consists of the mayor, chairman of the city council, and other city officials. In annual contract negotiations, the city approves the fee schedules submitted by the contractors and their subcontractors. Since reimbursement from HCFA is on a cost basis, the annual negotiation of contracts is not a particularly contentious process.

Baltimore had only two MHSP clinics at the start of the demonstration (Albert Witzke and Hollander Ridge). The city obtained funds under Section 330 of the Public Health Service Act to renovate Brehms Lane and equip Matilda Koval, which allowed these two sites to open as MHSP clinics in 1981. Washington Village also opened in 1981, although plans for this clinic had been developed prior to the MHSP Demonstration after community members convinced city officials that a health center was needed in the area.

In the initial years of the demonstration, the city owned and operated the clinics. The city reportedly worked closely with community organizations and activists when selecting the clinic locations and determining the services to be provided. The city transferred ownership of the clinics to the nonprofit organizations in 1986 to comply with new regulations prohibiting public control of Section 330 clinics, and because of uncertainty surrounding the continuation of the demonstration.[1] The city now acts primarily as a fiscal agent for demonstration funding and exercises little direct control over clinic operations_ The MHSP city administrator is a non-voting member of the boards for both Washington Village and BMSI, however, which gives the city an opportunity to stay informed about, and have input into, the overall operations of the MHSP. Because of the role of community

[1]The city has retained ownership of the building housing the Albert Witzke Health Center, but operations at the center are managed by BMSI.

activists in developing and maintaining the Baltimore MHSP, the program has close ties with local political institutions and community organizations.

2. Services Offered and Clinic Staffing

Each of the MHSP clinics in Baltimore offers a wide range of health care services and referrals to specialty care when necessary. In addition to primary medical care, the following services are available at each of the five MHSP clinics: pharmacy, optometry, podiatry, laboratory, mental health, and transportation. Ophthalmology and dental services are available at all clinics except Hollander Ridge, and radiology services are available at all clinics except Hollander Ridge and Matilda Koval. Patients at these clinics are referred to other BMSI clinics for these services. Physical therapy has been discontinued and is no longer available at any of the clinics.

The five Baltimore MHSP clinics vary in their staffing levels and stability. Washington Village has four full-time and four part-time primary care physicians, for a total of 6.0 full-time equivalents (FTEs), as well as a full-time physician assistant (Table 11.2). The clinic's staff has been very stable; four of the primary care physicians and a physician's assistant have worked at the clinic since before 1985. Other health professionals at Washington Village include dentists (7.5 FTEs), nurses (2.8 FTE), podiatrists (2.0 FTEs), a pharmacist (1.0 FTE), and an optometrist (0.8 FTE). Other medical specialists, including an otolaryngologist, gastroenterologist, general surgeon, and vascular surgeon are available to Medicare beneficiaries at the clinic during limited office hours.

At the time of our site visit, most physicians at the BMSI clinics worked part-time; only Matilda Koval and Brehms Lane had full-time primary care physicians.[2] During periods of physician shortages, BMSI has shared physicians between facilities. Collectively, the four BMSI clinics participating in the MHSP have 13.7 FTE primary care physicians. Other health professionals include nurses (15.6 FTE), dentists (8.8 FTE), pharmacists (7.0 FTE), podiatrists (3.6 FTE), and

[2]All four BMSI clinics now reportedly have full-time primary care physicians.

TABLE II.2

STAFFING PATTERNS FOR THE BALTIMORE MHSP
(Full Time Equivalents)

	Washington Village	Albert Witzke	Brehms Lane	Hollander Ridge	Matilda Koval
Primary Care MDs	6.0	4.0	3.4	1.4	4.9
Other MDs (including OB/GYN)	2.4	1.1	.5	.3	.3
Dentists	7.5	2.6	4.0	--	2.2
Optometrists	.8	.5	.6	.1	.2
Podiatrists	2.0	1.4	1.4	.1	.7
Pharmacists	1.0	2.0	3.0	--	2.0
Psychologists	--	1.4	1.4	.1	.8
Nurse Practitioners/Physician Assistants	1.0	1.0	1.6	.3	.6
Physical/Occupational Therapists	--	--	--	--	--
Nurses	2.8	3.5	5.0	2.1	5.0
Medical Technicians and Assistants	4.8	4.0	2.0	2.0	3.2
Administrative Personnel	12.0	8.0	9.0	4.0	9.0

Nom: Data on all employment categories provided by the Baltimore MHSP Administrator as of November, 1991.

physician assistants (3.5 FTE). An expanded medical specialty service at Albert Witzke includes an ophthalmologist, urologist, cardiologist, neurologist, orthopedist, and plastic surgeon.[3]

In general, the BMSI clinics have experienced more staff instability and recruitment problems than Washington Village. In the summer of 1990, Albert Witzke lost two physicians and a physician's assistant; Hollander Ridge recently lost a physician; and Matilda Koval recently lost its full-time internist. All three facilities report great difficulty recruiting pediatricians. Only Brehms Lane reports a very low turnover. BMSI requires its physicians to be board certifiable. Some respondents thought they were at a competitive disadvantage in recruiting physicians because of low starting salaries (slightly above $50,000 per year) and limited benefits. The primary advantage of an MHSP clinic is the setting, which allows committed doctors to practice comprehensive primary care to patients who are reported to be very grateful. The second advantage for provider recruitment is the flexible, predictable hours, which is a significant factor in recruiting women physicians who often must balance family and career.

3. **Accessibility of Services and Coordination of Care**

All clinics are open from 8:00 a.m. (or 8:30 a.m.) until 5:00 p.m. Monday through Friday, four of the clinics are open some weekday evenings, and two are open for approximately a half a day on Saturday. Same-day appointments are available at all clinics for acute problems. Each clinic is staffed by a triage nurse who screens patient requests and confers with a primary care physician in scheduling appointments. Clinic physicians are also available to handle after-hours emergencies.

The waiting list for new primary care MHSP patients at Washington Village currently has over 900 names, which translates into several months before an opening becomes available. At the time of the site visit, Albert Witzke had about 400 patients on its waiting list and a five month delay for

[3]The clinic's diagnostic facilities now include echocardiograms, cardiovascular stress testing, and doppler color flow mapping. Currently, HCFA is refusing to cover these three diagnostic services under the MHSP. The Baltimore MHSP Administrator contends that the rationale for accepting certain diagnostic testing procedures and rejecting others, particularly those involving new technology, has never been adequately explained by HCFA

new patients. It no longer has a waiting list, however, because it has converted space previously used for pediatric and obstetric care into space for treating MHSP patients. (The pediatric and obstetric services were relocated to another BMSI clinic not participating in the demonstration.) Other BMSI clinics reportedly do not have waiting lists for MHSP patients.

All centers reported a goal of delivering care as in a private medical group practice rather than a traditional clinic. Patients enroll with an individual primary care physician who provides medical care services and referrals when necessary. It was reported to us that pharmacy, radiology, and laboratory services can be accessed only through MHSP providers, which include physicians, dentists, and podiatrists. Other ancillary services, such as podiatry, dental, optometry, and mental health, can be accessed directly by patients. At each clinic, a patient's initial visit for medical care includes a medical history that is recorded in the medical record. Patients receive regular physical examinations pertinent to other medical problems, but routine physical exams are usually not scheduled.

Prescriptions at all clinics may be written for a 30-day supply for therapeutic drugs and for longer periods of supply for maintenance drugs. The MHSP pharmacies reportedly do not refill prescriptions that are over a year old, to ensure that patients see their primary care physician regularly. The pharmacies also maintain a computer system that monitors prescriptions for each patient and indicates possible drug interactions. If a patient receives a prescription from an outside specialist, the MHSP physician who made the referral is required to rewrite the prescription before it can be filled by the MHSP pharmacy.

To ensure that follow-up care is provided, patients are usually scheduled for their next appointment before they leave the clinic. It is routine procedure at all clinics to attempt to contact and reschedule patients who do not show up for a previously scheduled appointment. Both the clinic administrators and the primary care providers indicated that Medicare patients tend to be compliant with treatment plans, and rarely miss appointments.

4. **Revenue Sources and Financial Status**

The MHSP clinics in Baltimore receive a higher proportion of their revenues from Medicare than the MHSP clinics in the other three cities. About 95 percent of the medical visits to Washington Village are by Medicare beneficiaries, and Medicare accounts for about 94 percent of the clinic's total revenues (Table 11.3). Other revenue sources for Washington Village include Medicaid, private-pay under a sliding scale, and commercial insurance.

Among the four BMSI clinics, the percentage of revenues coming from Medicare ranges from 64.5 percent at Hollander Ridge to 88.4 percent at Brehms Lane. Medicare accounts for 72.3 percent of the combined revenue of the four BMSI clinics, while other revenue sources include Medicaid (9.0 percent), an HMO contract (10.9 percent), self-pay and private insurance (4.4 percent), and grants, including section 330 funds from HRSA (3.4 percent). Medicare beneficiaries account for nearly all the medical visits at Albert Witzke, while the patients at the three other BMSI centers are more diverse. In 1989, Medicare beneficiaries accounted for 88 percent of all medical visits at Brehms Lane, 58 percent of all medical visits at Matilda Koval, and 30 percent of all medical visits at Hollander Ridge!

Washington Village is financially stable, but the BMSI clinics have experienced significant financial difficulty. BMSI staff report that their financial problems have resulted in part from retrospective adjustments by HCFA of costs initially claimed under the MHSP Demonstration. These included retrospective adjustments for Medicare patients found on an audit not to be city residents (as required under the demonstration rules) and for dental care charged on the basis of a fee schedule rather than costs.[5] In 1989, BMSI reported a net loss of almost $650,000 on current

[4]Data on total visits are from a letter of May, 1991 from BMSI to HCFA correcting the 1989 cost reports.

[5]HCFA's auditors note that substantial portions of the adjustments are not for primary care delivered by BMSI but for services delivered by subcontractors. They argue that the financial effect of the adjustments has therefore not fallen entirely on BMSI but has been spread among the subcontractors.

TABLEII.3

SOURCES OF REVENUE FOR
BALTIMORE MHSP CLINICS, 1990

	Washington Village	Albert Witzke[b]	Brehms Lane[b]	Hollander Ridge[b]	Matilda Koval[b]
Medicare	94.0 %	80.8 %	88.4 %	64.5 %	65.9 %
Medicaid	1.5 [a]	4.7	2.5	9.1	10.2
HMO		5.0	6.8	--	15.0
Self-Pay/Commercial Insurance	4.5 [a]	4.6	1.3	14.3	4.8
Grants including 330	--	4.9	1.0	12.0	4.1
Total	100.0	100.0	100.0	100.0	100.0

'Oral estimates.

[b]Four health centers of BMSI. System total for Medicare is 72.3 percent, Medicaid 9.0 percent, HMO 10.9 percent, self pay 4.4 percent, and grants 3.4 percent.

operations and a working capital deficiency of over $2 million. These financial problems were significant enough for the independent auditor to conclude that "the Corporation's recurring losses from operations, working capital deficiency and fund balance deficiency raise substantial doubt about the entity's ability to continue as a going concern" (Peat Mar-wick, Auditors' Report for 1989). In response to increased financial pressure BMSI has taken several steps, including: seeking a special one-time appropriation from the State of Maryland, relocating to a lower cost headquarters, eliminating services and staff not covered under the Medicare waiver, instituting a more vigorous collections policy for services provided to non-Medicare patients, and restructuring the Albert Witzke clinic to double its capacity for new Medicare patients.

5. Competition With Local Providers

One of the original objectives of the MHSP Demonstration was to improve access to care in inner city areas by increasing the availability of primary care providers. In particular, it was hoped that MHSP clinics would become a regular source of care for individuals who had previously been receiving primary care services at hospital emergency rooms due to a lack of alternative providers. It appears, however, that the Baltimore MHSP has become so large that it is not effectively targeted to Medicare beneficiaries without access to other health care providers. A number of health care professionals in Baltimore, including physicians, dentists, podiatrists, and pharmacists, have organized to complain that MHSP clinics have an unfair competitive advantage and have significantly eroded their Medicare patient volume. We interviewed six such providers in April 1992, including an internist, two pharmacists, two dentists, and a podiatrist. Seventy-six Baltimore providers have petitioned the mayor with their complaints about the MHSP. Their primary complaint is that, by being able to offer free care to all city Medicare beneficiaries regardless of income, the MHSP Demonstration has made it difficult for other community providers to attract and retain Medicare patients. In 1990, the Baltimore City Medical Society wrote a letter to the HCFA Administrator expressing the same complaint and urging that the demonstration rules be changed to ensure that

MHSP services are targeted to individuals in financial need. The Medical Society also noted that non-MHSP physicians who wish to treat low income Medicare beneficiaries are not permitted to waive the Part B deductible and coinsurance, as is done under the demonstration.

The medical societies in the other three cities have not heard similar complaints about the MHSP from local providers--presumably because the program in those cities serves a much smaller number of Medicare patients. In 1990, the Baltimore MHSP treated 24,021 Medicare patients, while 7,728 were treated in San Jose, 4,805 in Milwaukee, and 1,612 in Cincinnati.

B. THE CINCINNATI MHSP

The Cincinnati MHSP is the smallest of the four programs, accounting in 1990 for only about 4 percent of the Medicare patients treated under the demonstration and about 4 percent of all Medicare MHSP reimbursements. The MHSP in Cincinnati has been integrated into a network of clinics that provide health care to low income residents of all ages. The MHSP has little visibility within the community as a distinct program, but is treated as an additional funding source by the participating clinics.

1. Administration and Organization

The Cincinnati MHSP is administered by the Assistant Commissioner for Primary Health Care in the City Health Department. Two of the three clinics participating in the MHSP (Northside Health Center and Braxton Cann Health Center) are part of a network of six clinics operated by the City Health Department. The third MHSP clinic (Winton Hills Health Center) is one of six independent, federally-funded CHCs whose operations are coordinated by the Cincinnati Health Network. The latter acts primarily as a fiscal agent for Section 330 funding from HRSA. The Cincinnati Health Department does not directly supervise operations at Winton Hills, but acts as the fiscal agent for MHSP funds from Medicare. A board of directors oversees operations at Winton Hills.

When the MHSP demonstration began, the Cincinnati Health Department was operating a network of clinics, four of which were selected as MHSP sites. The RWJF funds were used primarily to improve the integration of the clinics, through the development of a computerized management information system. One of the original MHSP clinics was closed as a demonstration site in 1984 and converted into a specialized clinic for sexually transmitted diseases. In 1986, the city relinquished ownership of the clinics which were receiving Section 330 funds from HRSA (including Winton Hills), in response to new regulations prohibiting public control of CHCs. There are now 12 clinics in Cincinnati, six operated by the City Health Department and six others operating as independent CHCs linked together as members of the Cincinnati Health Network.

Operations at the six Health Department clinics and the six independent CHCs are closely coordinated, because the city used to manage most of the CHCs. The 12 clinics share the same computer and billing systems, use a common purchasing system, and use the same quality assurance protocols. The CHCs receive direct budget support from the city council, as do the Health Department clinics. Among the demonstration cities, Cincinnati stands out as having a highly integrated control of the delivery of primary care to low income citizens.

The MHSP clinics in Cincinnati operate primarily on a staff model in which services are provided by salaried employees. At the two Health Department clinics, the only nonsalaried, contracted services are obstetrics, a specialized laboratory, and a van to transport patients. Pharmacy, general laboratory, and dentistry--which are often contracted services in other MHSP cities--are operated directly by the city. Winton Hills uses the same structure, except for a contract for the facility pharmacy. Subcontracts are formally approved by the city administration for the two Health Department clinics and the by the board of directors for Winton Hills.

Everyone connected with the MHSP repeatedly emphasized that every effort is made to treat Medicare beneficiaries in the three MHSP clinics no differently than other patients and no differently than Medicare patients in non-MHSP clinics. There are no special geriatric programs or clinics.

Elderly patients are mainstreamed into the public clinic network, where they account for less than a quarter of the medical visits. In contrast to Baltimore, the program apparently has little visibility among other health care providers in the area. For Medicare beneficiaries, the major differences between MHSP clinics and non-MHSP clinics is the waiver of Part B cost-sharing and the coverage for such ancillary services as pharmacy and dentistry in the MHSP clinics. The non-MHSP clinics charge Medicare patients low fees, however, which are essentially the same as their fees for Medicaid patients. Thus, coinsurance payments for Medicare patients at non-MHSP clinics are relatively low, and average about $6 per visit.

2. Services Offered and Clinic Staffing

Each of the three MHSP clinics offers primary medical care services, but they differ in the ancillary services offered. Northside, the larger of the two city-operated clinics, offers pharmacy services, dental care, optometry, laboratory, radiology, and transportation services. Braxton Cann, the other city-operated clinic, offers each of these services except dental and optometry services. Winton Hills offers all of the ancillary services offered by Northside in addition to podiatry. At each clinic, patients requiring specialized care are referred to a large Health Department clinic which is not part of the MHSP.

The staffing patterns at the three MHSP clinics reflect the strategy of concentrating on basic primary care services. There are few contracted specialists other than obstetricians. Staffing levels of primary care physicians at the three MHSP clinics are in the range of 2 to 3 FTEs, and staffing levels for nurses range from 4.8 to 8.5 FTEs (Table 11.4). Each clinic has between 1 and 2 FTE pharmacists. Northside has 2.1 FTE dentists and Winton Hills 0.75 FTE dentist, while Braxton Cann does not offer dental care. None of the clinics use nurse practitioners or physician assistants, due to practice restrictions mandated by Ohio law.

An interesting feature of the city-operated clinics is the expanded patient care role accorded pharmacists. They reported high satisfaction with their jobs, which include significant patient

TABLE II.4

STAFFING PATTERNS AT CINCINNATI MHSP CLINICS

	Northside		Braxton Cann		Winton Hills
	FTE	Employees	FTE	Employees	FTE[d]
Primary Care MDs	2.80	4	2.10	3	2.33
Medical Specialists	.57	1	.40	3	.35
Dentists"	2.07	3	--	--	.76
Optometrists	.40	1	--	--	.10
Podiatrist	--	--	--	--	.15
Pharmacist	2.00	2	1.00	1	1.00
Nurse Practitioner/ Physician Assistant	--	--	--	--	--
Physical/Occupational Therapists	--	--	--	--	--
Nurses	8.45	9	6.50	7	4.80
Medical Technicians	1.2	2	1.00	1	4.19
Medical Assistants[b]	--	--	--	--	1.00
Administrative Personnel'	11	11	N/A	9	9.73

"Dental assistants/hygienists are not included but equal to 1.62 FTEs Winton Hills and .40 FTE at Northside.

[b]Northside also has a medical social worker and Cann a once-a-week psychiatric outreach worker who screens for referrals to a Community Mental Health Center.

'Excludes nutritionists which are funded through WIC but can be used by the elderly. Also not counted are maintenance personnel.

[d]Only FTE data were available for Winton Hills.

education, monitoring of compliance with medication directions, and a gatekeeper function of requiring patients to obtain tests or see a physician before refilling prescriptions.

Between 1986 and 1987, budget shortfalls led to a hiring freeze which reportedly held down capacity because departing physicians could not be replaced. Shortages of nurse3 reduced productivity. The clinics have recently been more successful hiring staff, and respondents reported improvements in the quality of recently hired physicians. Traditionally, the clinics relied extensively on foreign medical graduates and retirees. The new physicians are younger and board-certified or board-eligible. The senior physician at Winton Hills is retired from private practice but reported to be a long-time and highly respected member of the local medical community.

Staff turnover at the MHSP clinics is reported to be low. Braxton Cann's senior primary care physician, a relatively young board-certified internist, has been there since 1986. His counterpart at Northside has been there for over ten years. Winton Hills has experienced more instability. The hiring of the current administrator five years ago was associated with an exit of physicians, but the current internists and the pediatrician have been at the clinic for the last three years.

3. **Accessibility of Services and Coordination of Care**

The MHSP clinics are generally open from 8:00 a.m. to 5:00 p.m., Monday through Friday, with evening hours on Monday at all three clinics and on Thursday at Winton Hills. None of the clinics is open during the weekend for medical services, but Northside provides dental services for Medicare patients on Saturday. Same-day appointments are available for acute problems in all clinics; triage is handled by a nurse with referral to a physician, as necessary. Each clinic has a waiting list of residents wanting to become new patients. The waiting list is about four months at Northside, six weeks at Braxton Cann, and five days or less at Winton Hills.

At all clinics, a primary care physician is either selected by or assigned to each patient (the latter usually occurs where only one physician is available). This physician is responsible for coordinating the care provided to the patient, including referrals to appropriate clinic or outside specialty services.

Patients obtain access to laboratory, radiology, and pharmacy services only through their primary care physician, but have direct access to such other services as dentistry and optometry. Most patients are not scheduled specifically for an annual routine physical exam, but the routine aspects of care, such as pap smears, are usually accomplished during visits throughout the year. Abnormal lab or radiology results are tracked by the primary care physician or clinic nurse, depending on the type of test and type of result. Regular follow-up clinic appointments are usually scheduled while the patient is in the clinic, and patients are contacted if they fail to show for their scheduled appointments. However, similar to regular fee-for-service physician practices, if a patient fails to schedule a follow-up or routine appointment, there are few mechanisms in place to ensure that these appointments are scheduled. Physicians who refer patients to specialists generally schedule the appointment, are alerted if the patient fails to meet the appointment, and receive written documentation from the referral which is incorporated into the patient's medical record.

Continuity of care is more problematic at some clinics than at others. While there is an established procedure of coverage to provide urgent consultation, after-hours care, and hospital admission and follow-up, physicians at Northside expressed concerned about coverage of their patients while they are on vacation. They indicated that arrangements are not usually made for coverage during such periods and that many patients who had problems during these periods were referred to a hospital emergency room. In contrast, neither the administrator nor the senior primary care physician at Braxton Cann indicated that coverage was a problem. The Winton Hills physician indicated that his colleagues (that is, physicians at other local CHCs) covered for him during vacation periods.

4. Revenue Sources and Financial Status

Medicare patients account for less than a quarter of the primary care visits to the three MHSP clinics, and reimbursements from Medicare account for a quarter or less of total budget of each clinic. Funds from the city government provide between two-thirds and three-quarters of the budget for the

two Health Department clinics (Table II.5). Other funding sources for these two clinics include Medicaid, self-pay patients, and private insurance. Winton Hills has a more diversified revenue base than the two Health Department clinics, with federal CHC funding and Medicaid each accounting for about a quarter of its revenues.[6] The clinics report seeing a growing number of patients who are employed but have no health insurance. Problems of the working poor were repeatedly emphasized.

The two Health Department clinics appear to be adequately funded at their present level of operations_ Administrators report that their salary levels are sufficient to attract an improving quality of physicians. There are still difficulties recruiting and retaining high quality clerical staff, however. The clinics' equipment reportedly needs upgrading, and administrators believe that the Braxton Cann facility is outdated and needs to be replaced. Winton Hills has experienced significant financial difficulties in the past, and has received a special appropriation from the city council to cover its deficits. The current executive director reports that the clinic is now running a small surplus. Operations are now constrained by physical capacity far more than by personnel or budget.

A notable feature of the Cincinnati MHSP is that since so much of the budget is contributed by the city, virtually every respondent was acutely aware of costs. The two city clinics use a highly restricted formulary, which is the subject of continuous negotiation between physicians and pharmacists. The recent rapid increases in drug prices have placed a strain on available resources and were frequently mentioned by both physicians and administrators. Respondents were also widely aware of efficiency goals and the CHC target of 4,200 to 6,000 visits per FTE medical provider per year, Progress toward this target was included in the annual review of each physician in the clinics.

[6]The proportion of each clinic's revenues coming from Medicaid has increased recently since Cincinnati has recently benefitted from a special provision in which Ohio Medicaid pays the city *clinks 80* percent of costs.

TABLE 11.5

DISTRIBUTION OF REVENUE BY SOURCE
CINCINNATI MHSP 1989

	Northside[a]	Braxton Cann[a]	Winton Hills[b]
Medicare/MHSP	18.9 %	12.7 %	25.0 %
Medicaid	13.9	7.1	25.0
Self-pay and Private Insurance	2.9	1.0	15.0
HMO	--	--	10.0
330 Grant	--	--	25.0
City Budget	64.2[a]	79.1[a]	--
Total	100.0	100.0	100.0

[a]Total amounts for Northside and Braxton Cann are taken from cost reports and included pro-rated costs from central administration. The proportion of revenue from the city budget is the residual between total costs and other revenue sources.

[b]Estimates from the Executive Director of Winton Hills.

C. THE MILWAUKEE MHSP

The Milwaukee MHSP is the second smallest of the four programs, accounting in 1990 for about 13 percent of the Medicare patients treated under the demonstration and about 10 percent of all Medicare MHSP reimbursements. The MHSP clinics in Milwaukee are housed in city-owned buildings where other health and social services are delivered. The MHSP in Milwaukee has suffered significant organizational instability and financial problems.

1. Administration and Organization

The Milwaukee MHSP is administered by the City Health Department. The MHSP Director within the Health Department reports to the Assistant Commissioner of Health for Budget and Facilities. Two MHSP clinics are currently operational in Milwaukee (Johnston Community Center and Isaac Coggs Health Center). A third MHSP clinic (Capitol Drive Community Health Center) closed in 1990 due to financial problems. The City Health Department owns and maintains the two buildings housing the remaining MHSP clinics and acts as fiscal agent for MHSP reimbursements from Medicare. The Health Department does not supervise day-to-day operations at the MHSP clinics, however. The buildings that house the MHSP clinics also contain offices of the county's department of social services, the city's public health and prevention program, a mental health clinic, a day care center, and a clinic for the Women, Infants, and Children (WIC) nutrition program.

The Milwaukee MHSP has a complex structure of numerous contractual relationships with only informal coordination at the clinic level. At each clinic, the Health Department has negotiated contracts with a provider of primary care services and three other prime contractors who provide dental, optometry, and physical therapy services. These contracts provide for both the leasing of the city-owned space and the provision of services. The primary care contractor at each clinic has negotiated subcontracts for such services as laboratory, radiology, and pharmacy. There are no overall clinic administrators, only separate administrators for each of the prime contractors. Each prime contractor has its own medical record system, its own billing system, and its own clerical staff.

Milwaukee structured the MHSP to minimize city administrative burden but maximize its integration into the overall health and social service delivery system. The City Health Department exerts limited control over the MHSP program. The MHSP Director has no staff devoted to the program and until recently has not attempted to audit cost reports, set quality assurance standards, or impose conditions for coordination of different service providers in the clinics. One official likened the arrangement to that of a shopping mall, where management is responsible for building upkeep and security, leases out space to tenants, but is not responsible for their individual operations other than ensuring they adhere to the terms of the lease.

Since 1985, the provision of primary care services at Isaac Coggs has been plagued by numerous changes in contractors. The most recent change occurred in 1990, with the replacement of a primary care contractor that had been a federally-funded CHC. That organization had its federal CHC funding terminated in 1990, following a long history of financial instability and poor record-keeping. The organization later declared bankruptcy. The primary care contract at Isaac Coggs was then awarded to a newly formed nonprofit organization, the Isaac Coggs Connection Inc., that applied for and received designation as a federally-funded CHC with the active encouragement of the regional office of HHS. This new organization resumed primary care at Isaac Coggs with a new director and new physicians.

The contract for primary care at Johnston has also changed recently. From 1986 to 1989, primary care at Johnston was delivered by a private physician group operating under subcontract to Sinai Samaritan Hospital. That arrangement ended when the physician group experienced significant financial difficulties. The lead physician in that group remains the principal primary care physician at the clinic, however. The hospital assumed direct responsibility for the provision of primary care at Johnston in 1989, and the primary care clinic now operates as a satellite clinic of the hospital's outpatient department. Administrative services, including billing, subcontracting, and cost accounting,

are handled by the hospital's parent corporation, Aurora Health Care. Staff at Aurora Health Care were unfamiliar with the details of the MHSP demonstration, however.

HCFA was not always informed of the serious problems confronting the demonstration in Milwaukee. Notably, HCFA personnel did not know that HRSA lifted the CHC grant from the organization providing primary care at Isaac Coggs and then renewed the grant with a new entity. Moreover, HRSA's central and regional office personnel most closely involved in monitoring this CHC had little or no information about the MHSP demonstration. Although HRSA was responsible for completely restructuring the MHSP primary care contractor, the latter's CHC grant was very small relative to its MHSP reimbursements.

2. Services Offered and Clinic Staffing

Each MHSP clinic in Milwaukee offers primary medical care, pharmacy, dental, optometry, laboratory, radiology, physical therapy, and transportation services.' Podiatry services are available at Johnston but not at Isaac Coggs. Neither clinic offers extensive medical specialty care. The Johnston center uses mobile diagnostic equipment including mammography and echocardiograms. The volume of patients is such that visits of these mobile vans is relatively infrequent, however.

Staffing levels at both Milwaukee MHSP clinics have been unstable in recent years due to the changes in primary care contractors. Even after the most recent change in contractors, both clinics have had considerable difficulty retaining full-time physician staff. At the time of the site visit, the staff at Isaac Coggs included 3.3 FTE primary care physicians, 3.0 FTE nurses, and 0.6 FTE optometrist (Table II.6).[8] Except for an obstetrician-gynecologist who works at the clinic part-time

'Pharmacy and radiology services were not available at Isaac Coggs at the time of the site visit, but contracts for these services were under negotiation. Both services are now reportedly available.

'Employment patterns were difficult to determine and verify since no one individual had detailed knowledge of the operations of all the separate contractors, and oral reports did not always match 1990 data supplied by the primary care contractors. As of January 1992, the number of FTE primary care physicians had reportedly increased to 5.6 at Isaac Coggs and 3.0 at Johnston.

TABLE II.6

STAFFING PATTERNS AT MILWAUKEE MHSP CLINICS

Employee Type	Isaac Coggs FTEs	Isaac Coggs Number of Employees	Johnston FTEs	Johnston Number of Employees
Primary Care MDs[a]	3.3	6	2.0	2
Medical Specialists				
Psychiatrist	--	--	.2	1
Dermatologist	--	--	.05	1
Oncologist	--	--	.1	1
OB-GYN	.05	1	.1	1
Dentists[b]	2.0	--	3.0	
Optometrists	.6	2	1.0	2
Podiatrist	--	--	.2	1
Pharmacist	--		1.0	1
Nurse Practitioner/ Physician Assistant	--	--	--	
Physical/Occupational Therapists	2.0	2	3.0	3
Nurses	3.0	3	1.8	2
Medical Technicians[c]	2.0	2	1.5	2
Medical Assistants[c]	4.0	4	2.0	4
Administrative Personnel[d]	4.0	N.A.	6.0	N.A.

[a]As of January, 1992 primary care physicians at Coggs had increased to 5.6 and at Johnston to 3.0 FTEs.

[b]There are in addition 14 dental students at Johnston and 9 at Coggs.

[c]Counts of technician, assistants and administrative personnel include only primary care, pharmacy, radiology and lab.

[d]Counts of Administrative Personnel as of November, 1991.

(0.05 FTE), the clinic has no medical specialists. The staff at Johnston includes 2.0 FIE primary care physicians, 1.8 FE nurses, and 1.0 FTE optometrist. A psychiatrist, dermatologist, oncologist, and obstetrician-gynecologist are each available at the clinic on a limited basis (0.2 FTE or less for each). Dental services at each clinic are provided through a contract with the Marquette University School of Dentistry. The dental staff at the two clinics ranges from 2 to 3 FTE in addition to numerous dental students.

Both clinics have experienced considerable difficulty retaining full-time physician staff. Isaac Coggs has a full-time medical director who has been at the clinic for a little more than a year. The other 2.3 FTEs are covered by five physicians, all of whom are new to the clinic. It had been hoped that one or more of the three National Health Service Corps physicians working at Isaac Coggs would stay as it was reorganized, but this did not occur. At Johnston, the current medical director was the head of the private physician group which previously held the primary care subcontract. He has been with the clinic for seven years. But in the summer of 1989, the exit of two National Health Service Corps physicians left him alone. A newly hired pediatrician stayed seven months.

3. **Accessibility of Services and Coordination of Care**

Johnston is open from 8:00 a.m. to 5:00 p.m. Monday through Friday, and Isaac Coggs is open from 8:00 a.m. to 5:30 p.m. Monday through Friday. A triage system run by members of the nursing staff is used for scheduling appointments; same-day appointments are available for current patients. New patients at Johnston have a 3 week wait for an initial appointment, while Isaac Coggs' patients have a **3** to **4** week wait.

When **new** patients enter the clinics, they are provided with a history form, and a physical assessment is performed. At both clinics, the patient is assigned a primary care physician who is responsible for ongoing care and referrals to appropriate clinic or specialty services. Laboratory, radiology, and pharmacy services at the clinics are accessed through the primary care physician; other services (such as dental care) are accessed directly by the patient. After-hours care is handled by an

answering service that refers callers to the on-call physician. Abnormal lab or radiology results are tracked by the physician and follow-up with the patient is performed by either the physician or a nurse. Johnston attempts to contact patients who fail to appear for preventive services at least once per year; written policies provide support for this practice. Doctors at Johnston and Isaac Coggs have admitting privileges, with patients at Johnston referred to Sinai Samaritan Hospital and patients at Isaac Coggs referred to Sinai Samaritan or St. Mary's Hospital.

The change in primary care contractors at Isaac Coggs in 1990 has resulted in a problem in the handling of medical records. Charts for patient care provided by the previous contractor are stored in the basement and have not been filed with the current charts. Thus, even for patients who have been coming to the clinic for many years, the chart only captures care received from April 1990 onward. Physicians who desire to review the patient's chart maintained by the previous contractor may request it and receive it within several hours. These prior records are not routinely provided for the physician during the patient's visit, however. This practice results in less effective coordination of care than would result from an integrated medical record.

4. **Revenue Sources and Financial Status**

Both of the Milwaukee MHSP clinics have become more dependent on demonstration funding in recent years, as their difficulty retaining pediatricians has resulted in large declines of younger patients. Medicare accounts for about 85 percent of all revenues at Johnston, Medicaid accounts for about 12 percent, and the remaining revenues come from self-pay and private insurance (Table 11.7). Isaac Coggs is less dependent on Medicare as a revenue source because of its funding from HRSA under the federal CHC program, which provides about 29 percent of the clinic's revenues. The remaining revenue sources at Isaac Coggs include Medicare (47 percent of the total), Medicaid (14 percent), grants other than federal CHC funding (8 percent), and self-pay and private insurance (2 percent). As noted above, the primary care contractors at both clinics have experienced financial difficulties in the past.

TABLE II.7

DISTRIBUTION OF PATIENTS AND REVENUE BY SOURCE
AT MILWAUKEE MHSP CLINICS

	Isaac Coggs Clinic		Johnston Clinic	
Payor	Visits[a]	Revenue[b]	Visits	Revenue[c]
Medicare/MHSP	54.1 %	47.4 %	58.8 %	85.2 %
Medicaid/Medicaid HMO	23.4	14.4	34.0	12.4
CHC 330 Grant	11.9	28.7	--	--
Self Pay	[d]	.7	2.0	1.1
Private Insurance	10.6	.8	4.1	.8
Indigent Care Pool	NA	NA	1.1	.5
Grants	--	8.0	--	--
Total	100.0	100.0	100.0	100.0

[a]Estimated on the basis of September and December, 1990 data.

[b]Revenue and visits for Primary Care Provider, Isaac Coggs Connection for calendar year 1991. In 1990 there was also a negligible proportion of funds from the state Indigent Care Pool.

[c]Visits and Revenues for 1990. Source of revenue estimated as percent of charges rather than reimbursements. Medicare proportion of revenues may be understated.

[d]Self-pay visits included as 330-grant funded visits.

NA = Not available.

D. THE SAN JOSE MHSP

The San Jose MHSP is the second largest of the four programs, accounting in 1990 for 20 percent of the Medicare patients seen under the demonstration and 21 percent of all MHSP reimbursements from Medicare. There is strong local interest in the MHSP and evidence of significant coordination of the MHSP with other organizations seeking to increase services to the elderly.

1. Administration and Organization

The San Jose MHSP is administered by the Office of the City Attorney. The City of San Jose does not have a health department because California law mandates that all public health functions in the state are the responsibility of counties rather than cities. The original rules of the demonstration required the MHSP to be administered by cities rather than counties, so San Jose placed this responsibility with the City Attorney. The MHSP Administrator in the City Attorney's office serves a limited role of program coordinator and fiscal agent for MHSP reimbursements from Medicare. The city MHSP Administrator does not supervise day-to-day operations at the clinics.

The San Jose MHSP includes four clinics. Two of the clinics (East Valley Clinic and Chaboya Clinic) are satellite clinics of the county public hospital, Santa Clara Valley Medical Center. The public hospital also operates a third satellite clinic that is not in the MHSP Demonstration_ These satellite clinics of the public hospital have traditionally provided a substantial amount of care to the indigent. The two other MHSP clinics are operated by nonprofit organizations with a history of service to the poor. One of these clinics (St. James Health Center) is operated by the Family Health Foundation of Alviso (FHFA), a CHC which is the primary recipient in the county of Migrant and Community Health Center funds from HRSA under Sections 329 and 330 of the Public Health Service Act. FHFA also operates two non-MHSP clinics. The fourth MHSP clinic (Gardner Health Center) is a small, single-facility organization that is funded by multiple sources, including the United Way.

The operations at each clinic are overseen by a board of directors and an MHSP community advisory committee, as required by the city. Because the Chaboya and East Valley centers are satellite clinics of the county hospital, the County Board of Supervisors serves as the board of directors for both the hospital and the clinics. The board at FHFA is composed of a majority of service users, as dictated by the PHS Section 330 grant requirements. Gardner's board is composed of community leaders and professionals, and serves primarily as a policy arm for the clinic. Additionally, a physician on Gardner's board assists with the quality assurance process, and several members of the board are active in fund-raising for the clinic.

There is strong local interest in, and institutional support for, the MHSP. Oversight to the demonstration is provided by the MHSP Steering Committee, which is chaired by a member of the city council. It includes two members of the community advisory committee associated with each clinic as well as a representative of the county public health department. The MHSP Administrator regularly provides information on the program to the MHSP Steering Committee and the community advisory committees for each clinic. A representative of the City Attorney's Office attends each meeting of the Steering Committee.

There is significant coordination of the MHSP with other organizations seeking to increase services to the elderly_ The San Jose MHSP has also actively sponsored needs-assessments of the elderly, including a survey of a random sample of 310 MHSP users (City of San Jose, 1988). The purpose of the survey was to obtain information on the socioeconomic and demographic characteristics and service use patterns'of MHSP patients. The MHSP also joined with the local council on aging to fund a larger survey of a sample of all elderly in the city. In response to the findings, a community action group was established by public and voluntary agencies to address the plight of isolated seniors in minority communities.

When organizers set out to establish the San Jose MHSP, they looked to existing provider sites and community groups that were best situated to address the city's most pressing health care

problems. According to the MHSP Administrator, the MHSP remains an integral part of the health care system in San Jose. In general, the San Jose MHSP emphasizes multi-use clinics without a geriatric specialty orientation. Three of the clinics (East Valley, Chaboya, and Gardner) are similar to the Cincinnati MHSP clinics in that Medicare beneficiaries comprise a minority of their patients. The St. James clinic, however, primarily serves senior citizens and in this respect resembles some of the clinics in Baltimore.

2. Services **Offered and Clinic Staffing**

Each of the four MHSP clinics provide primary care services and referrals to specialty care when necessary, but they offer a different set of ancillary services. St. James provides the most comprehensive set of services, including pharmacy, dentistry, optometry, laboratory, radiology, podiatry, and transportation services. St. James formerly had public health nurses available to provide patient education, but the clinic dropped that service in the fall of 1990. The clinic has a video service available for patients in the waiting room that provides health education, and pamphlets and other educational materials are also available to patients free of charge.

The two county clinics, Chaboya and East Valley, provide a comprehensive set of services, including pharmacy, dentistry, laboratory, radiology, and transportation services. Podiatry and optometry services are not available. Comprehensive dental care is available at Chaboya, and emergency dental services only at East Valley.' Comprehensive preventive services are available at both sites. Each clinic has a full-time diabetes educator. The clinics are located in the same buildings as other county programs, so such services as mental health and alcohol and substance abuse treatment are also available on site.

'According to a dentist we interviewed, Chaboya provides only emergency dental services to non-Medicare patients, while the Medicare waiver patients have full dentistry services available. The clinic has limited the services available to the non-Medicare population in order to maintain access to persons participating in the waiver program.

Gardner Health Center provides primary medical care, but most Medicare patients use the clinic for dental care only. In 1989, 78 percent of the clinic's reimbursement from Medicare was for dental care, 13 percent was for physical therapy, and 9 percent was for physician services. The survey of MHSP patients funded by the San Jose MHSP found that 88 percent of the Medicare patients at Gardner used the clinic for dental services, but only 15 percent used it for primary medical care (City of San Jose, 1988). Because Gardner lacks on-call physician care after hours and providers do not have hospital admitting privileges, patients with serious medical conditions are referred to the county hospital or one of its satellite clinics. Gardner's administrator indicated that most Medicare patients use the clinic for dental care and episodic medical care such as blood pressure checks and treatment for conditions such as the flu. Her perception is that most of the clinic's Medicare patients have a primary care physician elsewhere.

The two satellite clinics of the county hospital, Chaboya and East Valley, each have a larger staff of primary care physicians than the two independent clinics. Collectively, the two county-operated clinics have 14.4 FTE primary care physicians, 13.2 FTE nurses, 5.0 FTE pharmacists, 4.0 FTE dentists, and 2.0 FTE nurse practitioners (Table 11.8).[10] No optometrists or podiatrists are on staff. St. James is notable for having over twice as many FTE dentists as primary care physicians (5.6 versus 2.7). Other health professionals at St. James include pharmacists (2.0 FTE), optometrists (1.8 FTE), a nurse (1.0 FTE), a nurse practitioner (0.8 FTE), and a podiatrist (0.6 FTE). St. James also contracts with a surgeon to see patients at the clinic one morning a month. Gardner is the smallest of the four MHSP clinics in San Jose, with 2.0 FTE primary care physicians, 1.8 FTE nurse practitioners, 1.0 FTE dentist, 0.6 FTE nurse, and 0.4 FTE optometrist.

The two county clinics have been much more successful at recruiting and retaining medical providers than the other clinics. All staff at these two clinics are employees of the county public hospital, a teaching hospital affiliated with Stanford University Medical School. Full-time physicians

[10]There is some uncertainty about these figures since responses to interviews do not always match data provided in written format.

TABLE 11.8

STAFFING PATTERNS AT SAN JOSE MHSP CLINICS

	Gardner'		St. James[b]		East Valley'		Chaboya[d]	
	FTE	Employees	FTE	Employees	FTE	Employees	FTE	Employees
Primary Care MDs	2.0	2	2.7	3	7.7	8	6.7	7
Medical Specialist		--	0.8	2		--		--
Dentists	1.0	1	5.6	6	0.2	1	3.8	4
Optometrists	0.4	1	1.8	2		--		--
Podiatrist		--	0.6	1				
Pharmacist		--	2.0	2	2.0	2	3.0	3
Nurse Practitioner/ Physician Assistant	1.8	2	0.8	1	1.0	1	1.0	1
Physical/Occupational Therapists	--	--	--	--	--	--	--	--
Nurses	0.6	1	1.0	1	7.2	8	6.0	7
Medical Technicians			4.0	4	0.5	1	0.5	1
Medical Assistants	4.0	4	4.0	4			1.0	1
Admin. Personnel'	14.0	14	13.9	14	18.1	19	18.5	19

*Does not include dental assistants (2.0 FTE) and hygienists.

[b]Does not include dental assistants (7 FTE), pharmacy driver (0.25 FTE), security guard (1 .O FTE) and PBX operator (1 .O FTE)

'Does not include translators (1 FTE), dietician (0.1 FTE), janitors (2 FTE) and security guard.' As of December, 1991, East Valley reports the following differences in staffing: Primary Care MDs 8.4, Medical Specialists 0.3, Dentists .6, and Administrative Personnel 14.0.

[d]Does not include dental hygienist (0.9 FTE), translators (0.5 FTE), Dietician (0.1 FTE), janitor and security guard (1 FTE). As of December, 1991, Chaboyareports the following differences in staffing: Primary Care MDs 8.3, Medical Specialists .1, Dentists5.0, Pharmacist 2.1, Nurses7.7, Medical Technicians4.2, Medical Assistants, 7.5, and Administrative Personnel, 19.1.

[e]Administrative personnel may include some categories which can involve direct service-medical admitting clerks or medical translators for example.

also have ward duty and attending responsibilities and therefore rotate frequently between the clinics and the hospital. All physicians at the clinics and at Valley Medical Center are faculty with teaching as well as direct patient care responsibilities.

Gardner Health Center has experienced significant difficulty in recruiting primary care physicians. Until recently, the center was unable to recruit a full-time primary care provider and was forced to create a "patchwork" of providers to cover clinic hours. The difficulty in recruiting physicians has been due primarily to the relatively low salary the center was able to offer. The center has been able to increase salaries and benefits in the last few years, however. The center now has one full-time family practitioner, and the clinic administrator was confident that the continuity of care would improve."

St. James has been more successful in recruiting and retaining staff than Gardner. Although it cannot offer salary and benefits that compete with the county clinics, St. James has managed to maintain a core of providers who are committed to working for a nonprofit organization devoted to serving primarily the Hispanic population. In contrast, turnover among the support staff has been considerable. Respondents commented that the clinic seems to serve as a training ground for new staff, who gain experience at St. James and then move on for additional schooling or training. Medical assistants, for example, may work for a few years to get training and save money before entering nursing school.

3. Accessibility of Services and Coordination of Care

The two county hospital satellite clinics, Chaboya and East Valley, are open from 8:00 a.m. to 10:00 p.m., Monday through Friday. At Chaboya, medical services are available on Saturday from 8:00 a.m. until noon, and dental services are available from 8:00 a.m. to 5:00 p.m. St. James is open weekdays from 8:00 a.m. to 6:00 p.m. for medical services. At the time of the site visit, it was also

[11] In December, 1991, Gardner reported that it had signed a three-year contract with a family practice physician.

open on Saturday from 8:00 a.m. to 4:30 p.m. for optometry and dental services only, as well as on Sunday from 8:00 a.m. to 4:30 p.m. for dental services only. These weekend hours have been discontinued, however. Gardner is open weekdays from 9:00 a.m. to 6:00 p.m. Same-day appointments are usually available at all clinics, with triage handled by a staff nurse.

At each clinic, patients select or are assigned to a primary care physician, who is responsible for providing care and ordering referrals to specialists. Efforts are made to schedule each visit with the same physician. Laboratory, radiology, and pharmacy services are accessed by patients only through their primary care physician.[12] Physicians at the two county hospital satellite clinics have admitting privileges to area hospitals, but physicians at Gardner and St. James do not have admitting privileges. When patients at Gardner and St. James require hospitalization, they are referred to outside physicians who manage their care while in the hospital. At the two county hospital satellite clinics, after-hours and emergency care available through an "on-call" physician. At the time of the site visit (early 1991), physicians at St. James were not providing on-call services to handle after-hours emergencies, due to financial problems at the clinic. On-call provisions for after-hours care at St. James have reportedly been restored.

4. **Revenue Sources and Financial Status**

The four MHSP clinics in San Jose differ in their primary sources of revenue. The two satellite clinics of the county hospital, Chaboya and East Valley, are funded primarily from county general funds. Medicare MHSP reimbursements account for 31 percent of total revenue at Chaboya and 12 percent of total revenue at East Valley (Table II.9). Each of these clinics receives about 11 percent of its revenues from Medicaid and less than 10 percent from self-pay and private insurance. Both clinics run large deficits for uncompensated care paid for by transfers from the county hospital. St. James receives 72 percent of its funding from the Medicare program. Additional revenue sources

[12]Pharmacy and radiology services are not available at Gardner.

TABLE II.9

DISTRIBUTION OF REVENUE BY SOURCE
SAN JOSE MHSP, 1989

Payor	Gardner[a]	St. James[b]	East Valley[c]	Chaboya[c]
Medicare/MHSP	27.0 %	72.2 %	12.4 %	31.3 %
Medicaid	53.0	9.5	11.9	10.5
Self-pay and Private Insurance	16.0	14.4	9.2	5.6
HMO	--	--	--	--
330 Grant	--	--	--	--
City Budget	--	--	--	
Other	4.0	3.8	66.5'	52.6'
Total	100.0	100.0	100.0	100.0

NOTES: [a]Figures are approximate as reported orally and cover proportions of direct patient care revenue only. Not counted are United Way grants.

[b]Fiscal year 1990 (July 1989 - June 1990). Includes medical, dental, and optometry only. Including laboratory, x-ray and pharmacy, the MHSP accounts for approximately 80 percent of revenue.

'Figures cited were computed as receipts over total cost. Contribution of the hospital to cover the clinic's operating deficits were calculated as the residual between reported costs and revenue.

include federal CHC grants, Medicaid, self-pay, and private insurance.[13] Gardner receives 53 percent of its direct patient revenue from Medicaid and 27 percent from Medicare. Other sources of funds include self-pay, private insurance, and grants from the United Way.

The financial stability of the clinics varies. Chaboya and East Valley are quite stable, primarily because of financial backing from the county government. In contrast, Gardner and St. James, both owned by nonprofit organizations, are financially vulnerable. Gardner is currently operating under a very close financial margin, although its financial position has recently improved--in part because it has recruited a more sophisticated board of directors that can help in securing grant funding. The financial situation at St. James is unstable. The owner of the clinic, FHFA, discontinued its Medi-Cal HMO contract (Health Plan Plus) in September 1990 because of financial losses under the program. Termination of the contract, which had involved the care for approximately 12,000 Medi-Cal beneficiaries across the five FHFA health centers, placed a severe financial strain on the entire system, and FHFA was forced to close two of its health centers. Operations at St. James have been affected the least, since Health Plan Plus patients constituted a relatively small percentage of the clinic's total patient load. St. James named a new executive director in an effort to improve the clinic's financial circumstances.

[13]The figures in Table II.9 on revenues by source reflect data for 1989. At that time, Medi-Cal payments comprised roughly lo-percent of revenues at St. James. This funding source ceased, however, when FHFA dropped its contract as a Medi-Cal HMO.

III. EFFECTS OF THE MHSP ON SERVICE USE AND MEDICARE COSTS

In this chapter, we assess the effects of the MHSP Demonstration on service use and Medicare costs. The objective of the Medicare waivers originally granted under the MHSP Demonstration in 1979 was to determine whether offering expanded coverage for primary and preventive health care services to Medicare beneficiaries at selected inner-city health clinics would reduce Medicare costs. The expanded Medicare benefits offered under the demonstration include (1) the waiver of the Part B deductible and coinsurance and (2) coverage for many services not covered under the regular Medicare program, such as prescription drugs and dental care.

The benefit expansions granted under the MHSP Demonstration may have both a direct (or immediate) effect and an indirect (or longer term) effect on Medicare costs. The direct effect of the waiver of the Part B deductible and coinsurance is to increase Medicare costs, as the Medicare program is paying the full cost of Part B services provided at MHSP clinics, and the elimination of beneficiary cost-sharing is expected to increase the use of such services. If increased use of physician services leads to the prevention and early detection of illnesses and more effective management of medical conditions, however, it may reduce Medicare costs on inpatient hospital care and other services. The direct effect of coverage for such additional services as prescription drugs and dental care is to increase Medicare costs, as the Medicare program is incurring expenditures on these services that it would not otherwise incur. Coverage for some of these services may affect costs for regular Medicare services, however, by affecting the health status of MHSP patients. For example, the coverage for prescription drugs may enable low-income beneficiaries with chronic conditions to obtain necessary medications which they could not otherwise afford, thus improving their medical condition and perhaps reducing their use of Medicare services. Alternatively, if medications are not properly prescribed and monitored under the demonstration, some beneficiaries could experience

adverse health consequences that increase their use of Medicare services.* Finally, if MHSP clinics attract patients who otherwise would have obtained primary care services in hospital emergency rooms or outpatient departments (ERs/OPDs), Medicare costs will be reduced if the average cost of a primary care visit to an MHSP clinic is lower than the corresponding cost of a visit to a hospital ER/OPD. Such a shift in the site of care could yield additional cost savings if MHSP clinics provide better coordinated care and higher quality care than hospital ERs/OPDs. The net effect of the MHSP Demonstration on Medicare costs depends on the balance between those factors which increase costs and those which reduce costs.

A. OBJECTIVES

This chapter has three objectives. The first is to provide descriptive data on Medicare costs and service use patterns of beneficiaries who use MHSP clinics (MHSP users). The MHSP Demonstration has been operational for many years, but little information has been available on the patterns of service use and cost among MHSP users. In this chapter we present descriptive data on such items as the mean cost per patient for each type of MHSP service, the percentage of MHSP patients who use each service, the percentage distribution of MHSP costs across patients, the variation in the use and cost of MHSP services across cities, and the use of non-MHSP services by MHSP patients. This descriptive information on the types of services being used under the demonstration and the costs of those services provides essential background for assessing the cost-effectiveness of the demonstration.

The second objective of this chapter is to compare the demographic characteristics, service use patterns, and Medicare costs of MHSP users with those of other beneficiaries who live in the same areas but do not use MHSP clinics. We refer to this latter group as MHSP nonusers. MHSP nonusers will serve as the comparison group for estimating the effects of the demonstration on service

*The drug prescribing and monitoring behavior of MHSP physicians is assessed below in Chapter Iv.

use and Medicare costs. The descriptive comparisons of MHSP users and nonusers will provide a better understanding of the types of beneficiaries who are using MHSP clinics and provide useful background for assessing the effects of the demonstration.

The third objective of this chapter is to evaluate the effects of the MHSP Demonstration on service use and Medicare costs. Both economic theory and the results of the previous evaluation suggest that the demonstration will increase Medicare expenditures for some services but reduce expenditures for other services. The overall effect depends on whether the savings outweigh the cost increases. In our analysis, we assess the overall effects of the demonstration on Medicare costs as well as the effects on costs for specific services, such as inpatient hospital care and hospital ER/OPD services. The focus of this analysis is on costs incurred by the Medicare program, since these are the only costs for which we had data. We have not attempted to estimate the effects of the demonstration on the total costs of all health care services, which include all out-of-pocket costs incurred by beneficiaries.[2] Thus, our cost-effectiveness analysis is conducted from the perspective of the Medicare program and assesses the net effect of the MHSP Demonstration on Medicare program expenditures.

B. RESEARCH DESIGN

To address the research issues identified above, we have conducted a variety of statistical analyses on Medicare beneficiaries who use the MHSP clinics (MHSP users) and a matched comparison group of beneficiaries who do not use the clinics (MHSP nonusers). The comparison group was used to estimate the service use and Medicare costs that would have been observed for MHSP users in the absence of the demonstration. We selected the comparison group from the service areas of the MHSP clinics, to help achieve comparability between the two groups in socioeconomic status, the availability of health care providers, prevailing health care prices, and local

[2]We have included an analysis of the effect of the demonstration on out-of-pocket liability (i.e., deductibles and coinsurance) for standard Part A and Part B Medicare services, however.

practice patterns. We also used statistical methods to control for differences between MHSP users and nonusers on characteristics associated with the need for health care.

1. Beneficiary Samples

a. MHSP Users

The sample of MHSP users consists of all Medicare beneficiaries who used MHSP services at any time during the period 1987-89 and who met the following criteria:

- They were covered by Medicare and living in one of the demonstration cities at the start of the observation period (January 1, 1987).
- They were still living in the same city at the end of the observation period (December 31, 1989)--or at the time of their death if that was sooner.
- They were not enrolled in a Medicare HMO at any time during the 3-year observation period.

These restrictions were imposed to ensure that all sample members lived in one of the demonstration cities throughout the observation period and that Medicare claims data were available for all sample members throughout that period. Individuals entitled to Medicare due to end-stage renal disease (ESRD) were excluded from the sample because they constitute such a small percentage of the Medicare population and have service use and cost patterns much different from the rest of the Medicare population.[3] The MHSP user sample includes 33,679 beneficiaries--19,490 in Baltimore, 1,918 in Cincinnati, 6,058 in Milwaukee, and 6,213 in San Jose.[4]

To identify beneficiaries who lived in each demonstration city at the beginning and end of the observation period, we used the county code and zip code of residence on the Medicare enrollment file maintained by HCFA. Baltimore is an independent city and not part of a county; it has its own

[3] ESRD beneficiaries constituted 0.3 percent of the original MHSP user sample and 0.7 percent of the original nonuser sample.

[4] The Milwaukee sample includes patients at Capitol Drive, which closed in 1990 due to financial problems. We included these individuals in order to provide a complete picture of the demonstration during the study period.

"county code" on the enrollment file. Residents of Baltimore were thus identified directly from the county code of residence. For the three other cities, we identified city residents as those whose county code of residence corresponded to the county containing the city and whose zip code of residence was either totally or partially contained within the city boundaries. In a few cases, the zip codes from which the MHSP user sample was drawn extended beyond the city boundaries, but the percentage of users residing in those zip codes was relatively low.[5]

b. MHSP **Nonusers**

The comparison sample of MHSP nonusers consists of beneficiaries who lived in the service areas of the MHSP clinics during the 3-year observation period but did not use MHSP services during that period. To select this sample, we first identified the set of zip codes in each city that comprised the MHSP service areas. Using the zip code of residence of MHSP users on the Medicare enrollment file, we defined the MHSP service areas in each city as the set of zip codes in which approximately 90 percent of MHSP users resided. We then randomly selected a sample of nonusers such that (1) the distribution of nonusers across zip codes matched that of MHSP users, and (2) within each zip code, the distribution of nonusers by race matched that of MHSP users. We used race as well as zip code as a stratification variable in selecting the nonuser sample because we found that in some racially mixed zip codes, the MHSP was drawing patients predominantly from one racial group. Including race as a stratification variable was intended to yield a sample of nonusers from the same (or similar) neighborhoods within zip codes as the MHSP users.[6] The restrictions described above for the MHSP user sample were also imposed on the comparison sample. The final sample

[5]It is therefore possible that a small percentage of the individuals in the MHSP user sample may not be city residents but may live just beyond the city boundary. The inclusion of such individuals in the sample would not affect the basic findings of this evaluation, however.

[6]As discussed below in section 3, this approach to drawing the MHSP nonuser sample was limited by the fact that the Medicare enrollment file identifies only three racial categories: white, black, and other. The file does not identify Hispanics.

of MHSP nonusers includes 40,938 beneficiaries and is allocated across cities to match the percentage distribution of MHSP users.

2. Data Sources

The analyses described in this chapter used data from the following sources: (1) the claims and cost reports submitted to HCFA by MHSP clinics, (2) the Medicare enrollment file, and (3) Medicare claims for services rendered by non-MHSP providers.

a. MHSP Claims and Cost Reports

The sample of MHSP users in each city was identified from the claims submitted by the clinics to HCFA under the demonstration. These claims identify patients by name and Medicare identification (ID) number, and indicate the number of visits for routine physician services and the charges for each type of ancillary service provided. Reimbursements from Medicare for the services provided are not available directly on the claim, but require information from the cost reports submitted by the clinics to HCFA. We computed the Medicare reimbursement for routine visits using the allowable cost per routine visit from the relevant clinic's cost report for the relevant year. We computed the Medicare reimbursement for each type of ancillary service by multiplying the ancillary charges on each claim by the service-specific ratio of allowable costs to charges from the cost report for the relevant clinic and relevant year.

b. Medicare Enrollment File

The Health Insurance Skeleton Eligibility Write-off (HISKEW) file, which identifies all individuals covered by Medicare, was used as the frame for drawing the comparison sample of MHSP nonusers and as the source of eligibility and demographic data for both MHSP users and nonusers. We obtained from the file each beneficiary's Medicare ID number, date of birth, sex, race, Medicaid buy-in status, current reason for entitlement (age, disability, or renal disease), original reason for entitlement, and the state, county, and zip code of residence.

c. Medicare Claims for Non-MHSP Services

Our main source of claims data on services received by sample members from non-MHSP providers was the Medicare Automated Data Retrieval System (MADRS), HCFA's main file of Medicare claims. We used the MADRS file to compute such key measures of service use and cost as hospital admissions and Medicare payments by type of service. We also obtained detailed Part B claims data for Baltimore and Milwaukee. The data for Baltimore were obtained from a special file of Part B claims for 10 states maintained at HCFA, and the data for Milwaukee were obtained from the Medicare Part B carrier.' These data contain more detailed information on the use of physician services than is available from the MADRS file.

3. Data Limitations

Several limitations of the data should be noted. First, the Medicare enrollment file classifies all beneficiaries into one of three racial groups: (1) white, (2) black, and (3) other. Asians, Pacific Islanders, and Native Americans are all aggregated into the "other" category. Hispanics are classified as either white or black, but it is not possible to distinguish whites and blacks who are of Hispanic origin from those who are not. These limitations in the racial and ethnic classifications used in the Medicare enrollment file are most relevant for San Jose, where Hispanics and Asians combined account for about 45 percent of the population. The racial category "other" is expected to consist primarily of Asians, so the approach we described above for matching the MHSP user and nonuser samples should have yielded samples with a similar proportion of Asians. Because of the absence of any information on Hispanic origin, however, we cannot be certain that the two samples contain comparable percentages of Hispanics. In addition, the data available for this evaluation do not contain information on such characteristics as household income, Medicare supplemental insurance

'Maryland is **the** only **MHSP** state included on the special 100 percent file of Part B claims maintained at HCFA. We did not obtain Part B data from the carriers for Cincinnati or San Jose because the carriers indicated that they could provide Part B claims for only a portion of our observation period and that providing such data would be very expensive.

coverage, education, health status, or functional status. Such information could have been obtained only through a beneficiary survey.

It is important to recognize that these data limitations also faced one of the two analyses conducted by researchers at the Center for Health Administration Studies (CHAS) at the University of Chicago in their evaluation of the MHSP in the early 1980s. As described in Chapter I, the CHAS evaluation of the MHSP included two separate analyses of the effects of the MHSP on service use and costs, one based on survey data and one based on Medicare claims and enrollment data. The survey-based analysis did not face the data limitations described in the previous paragraph, but it had a very small sample of Medicare beneficiaries. The analysis based on claims and enrollment data suffered from all the data limitations described above, however. The two analyses conducted by CHAS yielded similar conclusions about the effects of the MHSP on service use and costs.

C. USE AND COST OF SERVICES BY MHSP PATIENTS

In this section, we describe the service use and cost patterns of beneficiaries who use MHSP clinics. The analyses were conducted separately for each city and for all cities combined. In the latter type of analysis, each sample member was weighted equally so the contribution of each city was proportional to its share of MHSP users. This approach, which was used throughout this chapter, yields estimates which represent the experience of the demonstration as a whole.

Following the terminology used by HCFA in administering the demonstration, we have classified MHSP services into two categories: routine and ancillary. Routine services are those provided by physicians and physician extenders, where the latter include physician assistants, nurse practitioners, and nurse midwives.[8] All other MHSP services are classified as ancillary services, Some ancillary services, such as laboratory and radiology, are covered under the regular Medicare program while others, such as prescription drugs and dental care, are not.

[8]Throughout the text, we use the terms routine services and physician services interchangeably.

1. **Overview**

In 1989, services provided by MHSP clinics cost the Medicare program an average of $984 per patient (Table 111.1). The cost of MHSP services per patient ranged from $684 in Cincinnati to $1,102 in San Jose. Pharmacy services constituted the largest share of MHSP costs in 1989, accounting for 36.5 percent of the total, followed by dental services at 25.7 percent and routine physician services at 17.7 percent.[9] Together, ancillary services not normally covered under the Medicare program accounted for three-quarters of the total cost of MHSP services. MHSP patients also obtained services from non-MHSP providers, so these figures represent only a portion of the total cost to Medicare of such beneficiaries.

Sixty-one percent of the beneficiaries who used MHSP services in 1989 had a routine visit with an MHSP physician during the year. Thus, 39.0 percent used the MHSP for ancillary services only. The ancillary services used by the largest percentage of MHSP patients in 1989 were pharmacy services (used by 61.2 percent of all MHSP patients), laboratory services (47.1 percent), dental services (43.7 percent), optometry services (29.2 percent), and podiatry services (26.8 percent). In every city except Milwaukee, over 60 percent of MHSP patients in 1989 used pharmacy services, and the percentage who used pharmacy services was slightly higher than the percentage who used MHSP physician services. In Milwaukee, 45.1 percent of MHSP patients in 1989 used pharmacy services, while 49.3 percent used MHSP physician services.

The percentage of MHSP patients who used each type of service offered under the demonstration remained relatively stable during the period 1987-89 (Table 111.2). In each year during this period, 39 to 40 percent of MHSP patients used MHSP clinics for ancillary services only. The percentage of MHSP patients who used MHSP physician services was highest in Cincinnati (69.3 percent in 1989) and lowest in Milwaukee (49.3 percent in 1989). When we examined the mean cost

[9]The costs of dentures are included with the costs of all other dental services. The costs of dentures and other dental services are supposed to be reportedly separately in the MHSP cost reports and the MHSP claims, but the Cincinnati MHSP has combined them. Thus, it is not possible to distinguish the costs of dentures from other dental costs for the demonstration as a whole.

TABLE III.1

MEAN COSTS TO MEDICARE FOR MHSP SERVICES IN 1989

	Cost to Medicare per MHSP User'	Percent of Total	Percent of MHSP Patients Who Used Each Service	Mean Cost of Each Service Among Users of the Service
All Cities				
All MHSP services	$984	100.0	--	--
Routine services[2]	174	17.7	61.0	285
Laboratory	52	5.3	47.1	111
Radiology	21	2.1	18.6	110
Pharmacy	359	36.5	61.2	587
Podiatry	49	5.0	26.8	184
Dental[3]	253	25.7	43.7	579
Optometry	27	2.7	29.2	92
Eyeglasses	12	1.2	15.6	75
AU other	37	3.8	19.4	190
Baltimore				
AU MHSP services	1,015	100.0	--	--
Routine services	148	14.6	62.5	236
Laboratory	43	4.2	46.7	92
Radiology	14	1.4	17.7	79
Pharmacy	409	40.3	63.6	643
Podiatry	75	7.4	37.9	198
Dental	264	15.9	43.0	614
Optometry	19	1.9	28.8	67
Eyeglasses	13	1.3	13.2	95
All other	31	3.1	18.2	173
Cincinnati				
AU MHSP services	684	100.0	--	--
Routine services	221	32.3	69.3	320
Laboratory	52	7.6	57.6	91
Radiology	14	2.0	28.6	49
Pharmacy	201	29.4	69.4	290
Podiatry	7	1.0	8.9	78
Dental	137	20.1	36.6	375
Optometry	10	1.5	173	58
Eyeglasses	2	0.3	9.8	25
AU other	39	5.7	27.0	143

TABLE III.1 (continued)

	Cost to Medicare per MHSP User[1]	Percent of Total	Percent of MHSP Patients Who Used Each Service	Mean Cost of Each Service Among Users of the Service
Milwaukee				
All MHSP services	822	100.0	--	--
Routine services	122	14.8	49.3	247
Laboratory	55	6.7	39.1	139
Radiology	35	4.3	11.9	295
Pharmacy	258	31.4	45.1	571
Podiatry	4	0.5	7.9	57
Dental	203	24.7	38.6	528
Optometry	52	6.3	35.8	146
Eyeglasses	11	1.3	24.8	43
All other	81	9.9	19.9	410
San Jose				
All MHSP services	1,102	100.0	--	--
Routine services	283	25.7	63.3	447
Laboratory	80	7.3	51.7	154
Radiology	31	2.8	23.9	130
Pharmacy	332	30.1	64.2	518
Podiatry	18	1.6	12.9	142
Dental	292	26.5	52.0	562
Optometry	35	3.2	28.6	124
Eyeglasses	13	1.2	17.1	74
All other	17	1.5	20.4	85

NOTE: The sample for this table includes MHSP users who used an MHSP clinic at least once 1989.

[1]The cost to Medicare per MHSP user is the mean cost of MHSP services in 1989 computed across all sample members who used MHSP services that year.

'Routine services are services provided by physicians and physician extenders. They do not include laboratory, radiology, or other services.

[3]Dental services include dentures.

TABLE III.2

PERCENTAGE OF MHSP PATIENTS USING EACH TYPE OF SERVICE, AND MEAN COSTS AMONG USERS OF EACH SERVICE, 1987-89

	Percentage Who Used the Service			Mean Cost Among Users of the Service			Percent Change in Mean Cost, 1987-89
	1987	1988	1989	1987	1988	1989	
All Cities							
Routine services	**60.6**	60.2	61.0	$262	**$294**	$285	8.8
Laboratory	**49.5**	49.5	47.1	107	114	111	3.7
Radiology	19.8	21.3	18.6	93	102	110	18.3
Pharmacy	61.6	62.1	61.2	418	531	587	40.4
Podiatry	21.8	24.8	26.8	179	173	184	2.8
Dental	42.4	41.3	43.7	439	466	579	31.9
Optometry	30.1	30.6	29.2	65	72	92	41.5
Eyeglasses	18.8	18.0	15.6	73	69	75	2.7
Baltimore							
Routine services	**59.7**	60.1	62.5	228	251	236	3.5
Laboratory	50.1	49.9	46.7	86	85	92	7.0
Radiology	22.9	21.8	17.7	70	72	79	12.9
Pharmacy	63.6	65.1	63.6	441	565	643	45.8
Podiatry	32.0	35.5	37.9	195	188	198	1.5
Dental	43.4	40.5	43.0	474	470	614	29.5
Optometry	30.7	29.4	28.8	49	47	67	36.7
Eyeglasses	17.8	16.1	13.2	86	91	95	10.5
Cincinnati							
Routine services	**72.9**	69.1	**69.3**	243	321	320	31.7
Laboratory	61.3	56.7	57.6	68	80	91	33.8
Radiology	27.6	29.5	28.6	60	53	49	-18.3
Pharmacy	74.5	71.7	69.4	367	460	**290**	-21.0
Podiatry	7.3	7.6	8.9	68	88	78	14.7
Dental	37.0	36.8	36.6	308	406	375	21.8
Optometry	11.7	15.2	17.3	44	44	58	31.8
Eyeglasses	8.1	9.4	9.8	25	14	25	0.0

TABLE III.2 (continued)

	Percentage Who Used the Service			Mean Cost Among Users of the Service			Percent Change in Mean Cost, 1987-89
	1987	1988	1989	1987	1988	1989	
Milwaukee							
Routine services	51.5	49.5	49.3	235	232	247	5.1
Laboratory	36.7	38.6	39.1	190	215	139	-26.8
Radiology	16.4	14.1	11.9	199	215	295	48.2
Pharmacy	43.1	42.7	45.1	389	500	571	46.8
Podiatry	4.7	7.7	7.9	44	60	57	29.5
Dental	34.7	34.4	38.6	403	462	528	31.0
Optometry	37.2	38.5	35.8	106	105	146	37.7
Eyeglasses	27.5	26.3	24.8	57	28	43	-24.6
San Jose							
Routine services	67.6	67.0	63.3	381	449	447	17.3
Laboratory	55.4	55.5	51.7	130	146	154	18.5
Radiology	10.5	23.5	23.9	128	149	130	1.6
Pharmacy	67.3	66.7	64.2	383	469	518	35.2
Podiatry	9.4	11.6	12.9	94	117	142	51.1
Dental	47.7	50.8	52.0	393	472	562	43.0
Optometry	27.4	31.8	28.6	79	110	124	57.0
Eyeglasses	17.4	19.4	17.1	64	69	74	15.6

NOTE: For each year, the sample consists of beneficiaries who used an MHSP clinic at least once during the year. The sample is also restricted to beneficiaries who were covered by Medicare and living in one of the demonstration sites as of January 1, 1987, were living in that site as of December 31, 1989 (or at the time of their death, if that was earlier), and were not enrolled in a Medicare HMO at any time during the 3-year period.

to Medicare for each type of MHSP service among beneficiaries who used the service, we found that the highest cost services in 1989 were pharmacy services ($587 per user), dental care ($579) physician services ($285), and podiatry services ($184). The services which exhibited the greatest increase in the mean cost per user between 1987 and 1989 were optometry services (41.5 percent increase), pharmacy services (40.4 percent increase), and dental services (31.9 percent increase). The mean cost of routine physician services among users of such services increased a more modest 8.8 percent during this period, and the mean cost of laboratory services, podiatry services, and eyeglasses among users of these services increased by less than 4 percent.

The MHSP claims do not contain information on the types of services provided within the broad service categories, so we cannot determine why the cost per user increased more rapidly for some services than for others. For example, we cannot determine whether the 40.4 percent increase in the mean cost of pharmacy services for users of such services was primarily due to a shift toward more expensive medications or to increased prices for medications which had been used in 1987. The Consumer Price Index for prescription drugs increased by 17.3 percent between 1987 and 1989 (U.S. Bureau of the Census, 1991), but this may not accurately reflect the average price increase during that time for the drugs used by Medicare MHSP patients.

There were significant differences across cities in the growth of the mean cost per user for some MHSP services. For example, from 1987 to 1989, the mean cost of physician services among users of such services increased by 3.5 percent in Baltimore, 5.1 percent in Milwaukee, 17.3 percent in San Jose, and 31.7 percent in Cincinnati. A much different pattern was observed for the mean cost of pharmacy services per user, which increased by 35.2 percent in San Jose, 45.8 percent in Baltimore, and 46.8 percent in Milwaukee, but declined by 21.0 percent in Cincinnati.[10] Other services for

[10] MHSP cost report data presented below in Chapter V show that pharmacy costs in the Cincinnati MHSP increased steadily from 1985 to 1988, then declined sharply in 1989, and then increased again in 1990. Thus,. 1989 appears to have been an atypical year for pharmacy costs in Cincinnati, which may reflect the effects of the financial problems experienced by the program discussed in Chapter II.

which the percentage change in the mean cost per user from 1987 to 1989 varied greatly across cities are podiatry services, for which the percentage increase in the mean cost per user ranged from 1.5 percent in Baltimore to 51.1 percent in San Jose, and radiology services, for which the percentage change ranged from an 18.3 percent decline in Cincinnati to a 48.2 percent increase in Milwaukee.

2. **Beneficiaries Who Use the MHSP for Ancillary Services Only**

In 1989, the average cost of MHSP services provided to beneficiaries who used MHSP clinics for ancillary services only was $469, of which $364--or 77.6 percent--was for dental care (Table 111.3). The ancillary services which had the next highest average costs among this segment of the MHSP user population in 1989 were optometry services and eyeglasses ($43 per beneficiary), podiatry services ($32), and pharmacy services ($17). In 1989, beneficiaries who used the MHSP for ancillary services only accounted for 18.6 percent of the total costs of the demonstration to Medicare.

Many of the beneficiaries who use the MHSP for ancillary services only are obtaining physician services elsewhere and appear to have had no prior relationship with MHSP physicians. Among beneficiaries who used the MHSP in 1989 for ancillary services only, 84.7 percent exceeded the Part B deductible for services rendered by non-MHSP providers that year. Only 13.3 percent of these beneficiaries had a visit with an MHSP physician in either 1987 or 1988, yet 63.7 percent used MHSP ancillary services during that period and 89.1 percent exceeded the Part B deductible for non-MHSP services in either 1987 or 1988. These patterns for the demonstration as a whole are similar to the patterns observed in each city (see Appendix Table Al).

Using the MHSP for such ancillary services as dental care or optometry services while obtaining physician services only from non-MHSP providers is not prohibited by the demonstration rules. The coverage for a broad array of ancillary services was originally intended, however, to help attract low-income beneficiaries to the clinics as their source of primary and preventive medical care. The finding that significant numbers of beneficiaries are using the MHSP for dental care and other ancillary services while obtaining physician services only from non-MHSP providers suggests that the

TABLE III.3

COMPARISON OF BENEFICIARIES WHO USED THE MHSP FOR ANCILLARY SERVICES ONLY WITH ALL OTHER MHSP PATIENTS, 1989 (ALL CITIES)

	Users of the MHSP in 1989 for Ancillary Services Only	Users of MHSP Physician Services in 1989	Column 1 Minus Column 2
Mean Medicare cost in 1989			
Total	$3,950	$4,665	-$715 **
MHSP services	469	1,313	-844 **
Non-MHSP services	3,481	3,352	129
Mean MHSP cost in 1989, by type of service			
Routine services	0	285	-285 **
Laboratory	1	85	-84 **
Radiology	2	32	-30 **
Pharmacy	17	578	-561 **
Podiatry	32	61	-29 **
Dental	364	182	182 **
Optometry	30	25	5 **
Eyeglasses	13	11	2 **
AU other	10	54	-44 *
Mean non-MHSP cost in 1989, by type of service			
Part A	2,130	2,172	-42
Inpatient	1,967	2,012	-45
SNF	41	36	5
Home health	82	91	-9
Part B	1,351	1,180	171 **
Physician/other suppliers	990	876	114 **
Outpatient hospital	360	303	57 **
Percent who exceeded the Part B deductible in 1989 (non-MHSP services)	84.7	76.0	8.7 **
Percent who exceeded the Part B deductible (non-MHSP services) in previous years			
1987	79.5	71.4	8.1 **
1988	82.7	74.5	8.2 **
1987 or 1988	89.1	86.2	2.9 **

TABLE III.3 (continued)

	Users of the MHSP in 1989 for Ancillary Services Only	Users of MHSP Physician Services in 1989	Column 1 Minus Column 2
Percent with an MHSP routine visit in previous years			
1987	9.2	72.3	-63.1 **
1988	9.1	81.6	-72.5 **
1987 or 1988	13.3	84.3	-71.0 **
Percent who used MHSP ancillary services in previous years			
1987	43.4	80.6	-37.2 **
1988	55.4	89.1	-33.7 **
1987 or 1988	63.7	91.3	-27.6 **
Sample Size	9,162	14,337	

*Significantly different from zero at the .05 level, two-tailed test.

**Significantly different from zero at the .01 level, two-tailed test.

demonstration may not be targeted effectively to low-income beneficiaries who cannot afford primary medical care or who do not have access to such care.

Beneficiaries who used MHSP clinics in 1989 for ancillary services only did not differ significantly from other MHSP users in their mean Medicare payments for Part A services but had a somewhat higher mean payment for non-MHSP Part B services ($1,351 versus $1,180). Such beneficiaries were thus obtaining substantial amounts of care from non-MHSP providers. Their use of non-MHSP physician services is examined in greater detail below using Part B claims data.

Beneficiaries who use MHSP clinics for ancillary services only appear to be attracted to the clinics primarily by the free dental care. In 1989, 60.2 percent of such beneficiaries used MHSP dental services (Table 1X1.4). In contrast, only about one-third of the users of MHSP physician services in 1989 used MHSP dental services. Other MHSP services used by significant proportions of the beneficiaries who use MHSP clinics for ancillary services only are optometry services (used by 31.2 percent), podiatry services (20.4 percent), pharmacy services (20.3 percent), and eyeglasses (18.9 percent). The use of pharmacy services by beneficiaries who do not use MHSP physician services is an issue of potential concern, as demonstration rules require that prescriptions dispensed by MHSP pharmacies be written by MHSP physicians. This issue is investigated further in section 5.

3. **Beneficiaries Who Use MHSP Physician Services**

In 1989, the average cost of MHSP services among beneficiaries who had at least one visit with an MHSP physician during the year was $1,313 (see Table III.3 above). Pharmacy services accounted for 44.0 percent of total MHSP costs for this segment of the MHSP user population in 1989, followed by physician services (21.7 percent), dental services (13.9 percent), and laboratory and radiology services (8.9 percent). All other ancillary services accounted for a combined 11.5 percent of the total. About 87 percent of these beneficiaries used MHSP pharmacy services in 1989, and about three-quarters used MHSP laboratory services (see Table III.4 above). No other MHSP ancillary service was used by more than 35 percent of these beneficiaries.

TABLE III.4

PERCENTAGE OF MHSP PATIENTS USING EACH TYPE OF SERVICE AND MEAN COSTS AMONG USERS OF EACH SERVICE: COMPARISON OF USERS OF THE MHSP FOR ANCILLARY SERVICES ONLY WITH ALL OTHER MHSP PATIENTS, 1989

	Users of the MHSP in 1989 for Ancillary Services Only		Users of MHSP Physician Services in 1989	
	Percentage Who Used Each Service	Mean Cost Among Users of the Service	Percentage Who Used Each Service	Mean Cost Among Users of the Service
All cities				
Routine services	0.0	--	100.0	$285
Laboratory	2.1	38	75.9	112
Radiology	3.7	57	28.1	115
Pharmacy	20.3	83	87.3	662
Podiatry	20.4	156	30.9	196
Dental	60.2	605	33.1	549
Optometry	31.2	97	27.9	89
Eyeglasses	18.9	70	13.4	80
All other	4.9	200	28.6	189
Baltimore				
Routine services	0.0	--	100.0	236
Laboratory	2.1	27	73.4	93
Radiology	3.3	70	26.3	80
Pharmacy	25.8	88	86.3	742
Podiatry	31.6	162	41.7	214
Dental	59.1	660	33.3	566
Optometry	25.8	61	30.6	69
Eyeglasses	14.2	94	12.6	96
All other	3.9	81	26.8	181

TABLE III.4 ***(continued)***

	Users of the MHSP in 1989 for Ancillary Services Only		Users of MHSP Physician Services in 1989	
	Percentage Who Used Each Service	Mean Cost Among Users of the Service	Percentage Who Used Each Service	Mean Cost Among Users of the Service
Cincinnati				
Routine services	0.0	--	100.0	320
Laboratory	3.0	49	81.7	91
Radiology	34.8	32	25.9	59
Pharmacy	14.3	16	93.8	308
Podiatry	12.0	79	7.5	77
Dental	67.5	360	22.9	394
Optometry	25.0	55	13.8	60
Eyeglasses	14.3	21	7.9	28
All other	7.8	100	35.1	147
Milwaukee				
Routine services	0.0	--	100.0	247
Laboratory	1.1	24	78.2	141
Radiology	0.3	155	23.9	296
Pharmacy	7.4	118	84.0	612
Podiatry	1.5	42	14.4	58
Dental	52.5	548	24.3	484
Optometry	47.8	141	23.4	156
Eyeglasses	33.8	42	15.5	44
All other	5.8	577	34.5	382
San Jose				
Routine services	0.0	--	100.0	447
Laboratory	2.9	65	79.9	156
Radiology	1.3	98	37.0	130
Pharmacy	18.6	57	90.6	573
Podiatry	8.2	131	15.7	145
Dental	70.9	566	41.1	559
Optometry	31.3	122	27.1	125
Eyeglasses	18.5	76	16.3	73
All other	6.4	83	28.5	85

Beneficiaries who used MHSP physjcian services in 1989 also obtained significant amounts of care from non-MHSP providers. The average Medicare payment for non-MHSP Part B services for these beneficiaries in 1989 was $1,180--nearly three times the average combined cost of physician, laboratory, and radiology services they received from MHSP clinics ($402). Over three-quarters of these beneficiaries exceeded the Part B deductible for non-MHSP services in 1989. Most had used MHSP physician services in previous years; over 80 percent had at least one MHSP physician visit in 1988, and over 70 percent had at least one visit in 1987.

The average number of MHSP physician visits in 1989 among users of MHSP physician services was 5.4 (Table 111.5). As discussed below, many beneficiaries also visited non-MHSP physicians, so these figures represent only a portion of their physician visits. The average number of visits with MHSP physicians among users of MHSP physician services ranged from 4.8 in Milwaukee to 6.3 in Cincinnati. In Cincinnati, 84.1 percent of the users of MHSP physician services had three or more visits, and 53.2 percent had six or more visits. For the demonstration as a whole, 74.2 percent of the users of MHSP physician services had three or more visits and 39.6 percent had six or more visits. The higher rate of visits in Cincinnati may reflect differences in case mix or practice patterns, or it may indicate that MHSP patients in Cincinnati receive a higher proportion of their care from MHSP physicians.

4. Relationship Between MHSP Ancillary Costs and the Use of MHSP Physician Services

The data presented above indicate that, on average, users of MHSP physician services have much higher costs for MHSP ancillary services than those who use the clinics for ancillary services only. In 1989, the average cost of MHSP ancillary services among users of MHSP physician services was $1028, compared with $469 for those who obtained only ancillary services from the clinics. To further investigate the relationship between MHSP ancillary costs and the use of MHSP physician services, we classified MHSP users by their ancillary costs in 1989, and then examined the use of MHSP physician services across those categories.

TABLE 111.5

PERCENT DISTRIBUTION AND MEAN OF THE NUMBER OF VISITS TO MHSP PHYSICIANS, 1989

	All Cities	Baltimore	Cincinnati	Milwaukee	San Jose
Percent Distribution of the Number of MHSP Physician Visits					
Users of MHSP Physician Services					
1	14.9	16.3	8.5	13.7	13.4
2	10.9	9.8	7.3	19.5	9.9
3 - 5	34.6	36.4	30.9	34.8	30.5
6 - 10	29.4	27.8	40.6	23.8	34.2
over 10	10.2	9.8	12.6	8.3	12.0
All MHSP Users					
0	39.0	37.5	30.7	50.7	36.7
1	9.1	10.2	5.9	6.8	8.5
2	6.6	6.1	5.1	9.6	6.3
3 - 5	21.1	22.7	21.4	17.1	19.3
6 - 10	17.9	17.4	28.2	11.7	21.6
over 10	6.3	6.2	8.8	4.1	7.6
Mean Number of MHSP Physician Visits					
Users of MHSP physician services	5.4	5.3	6.3	4.8	6.0
All MHSP Users	3.3	3.3	4.4	2.4	3.8

For the demonstration as a whole, 15.5 percent of MHSP users in 1989 had ancillary costs below $100, 35.8 percent had ancillary costs between $100 and $500, 19.4 percent had ancillary costs between $500 and $1,000, and 29.3 percent had ancillary costs over $1,000 (Table 111.6). In general, higher ancillary costs tend to be associated with greater use of MHSP physician services. For example, beneficiaries who had over $1,000 in ancillary costs had an average of 6.1 visits with MHSP physicians, while those who had ancillary costs between $100 and $500 had an average cf 1.7 visits, and those with ancillary costs less than $100 had an average of 0.7 visits. As we discuss below, this is due in part to the fact that pharmacy services are the largest component of ancillary costs, and individuals with high pharmacy costs tend to have high numbers of MHSP physician visits. Despite this general relationship between ancillary costs and physician visits, approximately one-fifth of the beneficiaries with ancillary costs over $1,000 had no visits with MHSP physicians. Data presented below show that this is due primarily to heavy use of MHSP dental services by some beneficiaries who use the MHSP clinics for ancillary services only.

5. Use and Cost of MHSP Pharmacy Services

Pharmacy services currently account for a higher percentage of MHSP costs than any other service category. In 1989, 87.3 percent of the beneficiaries who used MHSP physician services also used MHSP pharmacy services. The average cost of pharmacy services across all users of MHSP physician services in 1989 was $578, while the average cost among those who used pharmacy services was $662 (see Tables III. 3 and III.4 above). The average cost of pharmacy services among MHSP users varies considerably across cities. Among users of both MHSP physician services and pharmacy services in 1989, the average cost of pharmacy services was $308 in Cincinnati, $573 in San Jose, $612 in Milwaukee, and $742 in Baltimore.

In 1989, 98.2 percent of all MHSP pharmacy costs were incurred by beneficiaries who used MHSP physician services during the year, while the remaining pharmacy costs were incurred by beneficiaries who used MHSP clinics for ancillary services only. Among users of MHSP physician

TABLE III.6

USE AND COST OF MHSP SERVICES FOR MHSP USERS CLASSIFIED BY MHSP ANCILLARY COSTS, 1989 (ALL CITIES)

	MHSP Ancillary Service Costs in 1989			
	< $100	$101 - $500	$501 - $1.000	Over $1.000
Percentage of MHSP users	15.5	35.8	19.4	29.3
Mean cost of ancillary services (dollars)	46	250	736	1,949
Mean cost of MHSP routine services (dollars)	39	88	209	328
Mean number of MHSP physician visits	0.7	1.7	4.1	6.1
Percent distribution of MHSP physician visits				
0	63.1	51.3	25.5	20.1
1-2	29.4	19.8	10.7	6.8
3-5	6.1	20.0	33.5	22.3
over 5	1.4	8.9	30.3	50.8
MHSP physician, lab, and radiology costs as a percentage of total Part B costs (percent distribution)				
< 25	80.8	66.2	43.4	39.5
26 - 50	5.3	8.4	13.2	17.2
51-75	2.7	5.7	11.1	12.8
> 75	11.3	19.7	32.4	30.5

NOTE: MHSP ancillary services include all MHSP services except those provided by physicians and physician extenders.

services in 1989, the distribution of MHSP pharmacy costs covered a broad range, with some beneficiaries incurring no pharmacy costs or very low costs and others incurring costs of over $2,500. For the demonstration as a whole, 28.9 percent of the users of MHSP physician services had MHSP pharmacy costs of less than $100 (including those with zero costs), while 19.4 percent had pharmacy costs of over $1,000 (Table 111.7). The percentage who had pharmacy costs of over $1,000 was highest in Baltimore (22.7 percent), followed by Milwaukee (16.9 percent), San Jose (16.4 percent), and Cincinnati (2.7 percent). Among beneficiaries who used MHSP pharmacy services without using MHSP physician services, the vast majority had pharmacy costs of less than $100. About half of such beneficiaries had only one pharmacy claim during the year, and about 40 percent had between one and five claims (Appendix Table A.2).

MHSP patients who used pharmacy services without having a visit with an MHSP physician constituted 7.9 percent of the total MHSP patient population in 1989." In 1989, the average cost of pharmacy services for beneficiaries who received pharmacy services but not physician services from MHSP clinics was $83--significantly lower than the average cost of $662 for pharmacy services provided to users of MHSP physician services (see Table III.4 above). The pharmacy services provided to beneficiaries who did not visit an MHSP physician during the year may consist of medications prescribed by MHSP podiatrists and dentists, refills of prescriptions written by MHSP physicians during the previous year, or over-the-counter medications.[12]

Users of MHSP physician services in 1989 had an average of 9.8 pharmacy claims during the year, with an average cost per claim of $59 (Appendix Table A.3). In contrast, beneficiaries who used MHSP clinics in 1989 for ancillary services only had an average of 0.5 pharmacy claims during the year, with an average cost per claim of $33. It is important to keep in mind, however, that a one-to-

"The percentage of MHSP patients who used MHSP pharmacy services in 1989 but had no MHSP physician visits during the year ranged from 3.7 percent in Milwaukee to 9.7 percent in Baltimore.

[12]Over-the-counter medications are not covered services under the demonstration, although there has been confusion in the past concerning HCFA's policy in this area.

TABLE III.7

PERCENT DISTRIBUTION OF MHSP PHARMACY COSTS IN 1989

MHSP Pharmacy Costs (Dollars)	All MHSP Users in 1989	Users of MHSP Physician Services in 1989	Users of the MHSP in 1989 for Ancillary Services Only
All Cities			
0	38.8	12.7	79.7
1 - 100	16.9	16.2	17.9
101 - 250	9.2	14.3	1.1
251 - 500	10.6	17.1	0.6
501 - 1,000	12.5	20.3	0.3
1,001 - 2,500	10.3	16.8	0.2
over 2,500	1.7	2.6	0.1
Baltimore			
0	36.4	13.7	74.2
1 - 100	18.4	15.4	23.3
101 - 250	8.0	12.2	1.1
251 - 500	9.9	15.5	0.6
501 - 1,000	13.0	20.6	0.3
1,001 - 2,500	12.1	19.2	0.3
over 2,500	2.1	3.5	0.2
Cincinnati			
0	30.6	6.2	85.8
1 - 100	21.3	24.5	14.3
101 - 250	17.4	25.1	0.0
251 - 500	17.9	25.8	0.0
501 - 1,000	10.9	15.7	0.0
1,001 - 2,500	1.8	2.7	0.0
over 2,500	0.0	0.0	0.0
Milwaukee			
0	54.8	16.0	92.6
1 - 100	9.6	13.7	5.7
101 - 250	7.6	14.7	0.7
251 - 500	9.3	18.4	0.4
501 - 1,000	10.3	20.3	0.6
1,001 - 2,500	7.6	15.4	0.1
over 2,500	0.7	1.5	0.0
San Jose			
0	35.8	9.4	81.5
1 - 100	16.9	17.8	15.4
101 - 250	11.6	17.0	2.1
251 - 500	11.9	18.3	0.8
501 - 1,000	13.5	21.2	0.2
1,001 - 2,500	9.4	14.9	0.0
over 2,500	0.9	1.5	0.0

one correspondence does not exist between pharmacy claims and the number of prescriptions_ In some cases, two or more prescriptions may be billed on the same claim.[13] In addition, some claims represent initial prescriptions while others represent refills. Thus, data on the annual cost per beneficiary are more useful than data on the cost per claim.

An assessment of whether MHSP physicians are adequately monitoring patients who are receiving prescription medications is presented below in Chapter IV using data collected from a sample of medical records. Using the claims data, we have investigated whether MHSP patients who are heavy users of pharmacy services are also heavy users of MHSP physician services--as one would expect if the MHSP physicians prescribing the medications are coordinating the patients' care. As shown in Table 111.8, there is a strong positive correlation between MHSP pharmacy costs and the number of visits with MHSP physicians. The vast majority of MHSP users with over $100 in pharmacy costs in 1989 had three or more visits with MHSP physicians during the year, and beneficiaries with higher pharmacy costs tend to have higher numbers of visits. Among MHSP users with pharmacy costs in 1989 between $100 and $250, 74.6 percent had 3 or more MHSP physician visits during the year and 30.9 percent had six or more visits. Among MHSP users with pharmacy costs in 1989 of over $2,500, 96.4 percent had 3 or more MHSP physician visits during the year and 82.7 percent had six or more visits. The findings are similar when the use of pharmacy services is measured by the number of pharmacy claims rather than pharmacy costs.

We found a small number of MHSP users who had high pharmacy costs in 1989 but no MHSP physician visits during the year. This occurred most frequently in Baltimore,. where 0.3 percent of MHSP users had pharmacy costs of over $500 but no MHSP physician visits, and 0.2 percent had pharmacy costs over $1,000 but no visits.[14] In conjunction with the medical record review

[13]The number of prescriptions for which Medicare is billed is not indicated on the claim.

[14]In Milwaukee, 0.3 percent of MHSP users had pharmacy costs of over $500 but no MHSP physician visits, while 0.1 percent of MHSP users in San Jose fell into this category. There were no such cases in Cincinnati.

TABLE III.8

PERCENT DISTRIBUTION OF THE NUMBER OF MHSP PHYSICIAN VISITS FOR BENEFICIARIES CLASSIFIED BY PHARMACY COSTS AND THE NUMBER OF PHARMACY CLAIMS, 1989 (ALL CITIES)

	Percentage of All MHSP Users	Percent Distribution of MHSP Physician Visits					
		0	1	2	3 - 5	6 - 10	> 10
Pharmacy costs (dollars)							
0	38.8	80.1	12.6	4.3	2.3	0.5	0.2
1 - 100	16.9	41.4	15.7	13.4	21.8	7.1	0.8
101 - 250	9.2	4.8	8.0	12.6	43.7	26.5	4.4
251 - 500	10.6	2.2	4.1	7.6	43.1	34.5	8.6
501 - 1,000	12.5	1.1	2.2	4.2	39.7	40.0	12.9
1,001 - 2,500	10.3	0.8	0.8	1.8	26.8	46.0	23.7
over 2,500	1.7	2.3	0.5	0.8	13.7	41.5	41.2
Number of pharmacy claims							
0	38.8	80.1	12.6	4.3	2.3	0.5	0.2
1	8.0	50.8	23.5	12.0	11.1	2.4	0.2
2	4.8	35.9	13.4	20.0	24.3	5.5	1.1
3 - 5	10.1	14.6	8.8	13.3	46.8	14.4	2.1
6 - 10	14.0	2.9	3.5	7.1	46.8	35.4	4.4
11 - 15	11.5	1.0	1.6	4.2	35.7	45.3	12.2
16 - 20	5.9	0.7	0.7	2.1	27.3	47.6	21.7
21 - 30	4.8	0.8	0.9	1.0	20.7	43.4	33.2
over 30	2.1	1.2	0.4	1.2	10.8	37.7	48.7

conducted for the quality of care analysis described below in Chapter IV, we reviewed the medical records of a sample of MHSP patients in Baltimore who had high pharmacy costs but no MHSP physician visits. We found that most of these patients were being maintained in the home by an MHSP physician or physician extender. The home visits by MHSP physicians, physicians assistants, and nurses were not billed as routine visits under the demonstration, however. Our findings are thus not indicative of any misuse of the MHSP clinics by these beneficiaries.

To provide some perspective for interpreting the pharmacy costs for MHSP users, it would be useful to compare them with the pharmacy costs incurred by other Medicare beneficiaries. Unfortunately, reliable data are not available on prescription drug expenditures for the Medicare population nationally. The 1987 National Medical Expenditure Survey (NMES) questioned respondents about their use of and expenditures for prescription drugs. This survey found that 82 percent of the noninstitutionalized national Medicare population used at least one prescription medication during the year, and their average annual expenditure for prescription medications in 1987 was $248 (Moeller and Mathiowetz, 1989).[15] These figures imply that the average annual expenditure for prescription medications among beneficiaries with at least one prescription was $302. It is widely believed, however, that these self-reported data on prescription drug expenditures suffer from substantial underreporting. One study has found that prescription drug expenditures in NMES are underreported by 23 percent (Berk, Schur, and Mohr; 1990). If we assume this level of underreporting for the Medicare population, the average expenditure for prescription drugs for the Medicare population nationally is still significantly lower than the average expenditure incurred for MHSP users.

We would expect MHSP users to have higher prescription drug expenditures than the Medicare population nationally for several reasons. First, the MHSP pharmacy benefit may have attracted

[15]One limitation of the comparison of MHSP pharmacy expenditures with data from NMES on prescription medication expenditures is that the former may include expenditures for over-the-counter medications and medical supplies.

beneficiaries to the demonstration who have a higher than average need for expensive prescription medications. Second, the absence of any beneficiary cost-sharing for pharmacy services under the MHSP Demonstration has presumably induced additional demand for such services--that is, we would expect MHSP users to be using more pharmacy services on average than they would have used absent the demonstration.[16] Finally, the cost-based reimbursement system used under the demonstration does not provide any incentive for the MHSP clinics to minimize the cost of the medications they dispense to Medicare beneficiaries.

6. Use and Cost of MHSP Dental Services

Dental services are second only to pharmacy services in their contribution to the total costs of the demonstration to Medicare. In 1989, 43.7 percent of all MHSP patients used MHSP dental services, costing the Medicare program an average of $579 per user (Table 111.9). The distribution of MHSP dental costs covered a broad range. Across the four cities, 27.2 percent of the beneficiaries who used MHSP dental services in 1989 had dental costs of $100 or less, while 21.1 percent obtained dental services costing over $1,000.

The use and cost of dental services varied significantly across cities. The percentage of MHSP patients who used dental services in 1989 ranged from 36.6 percent in Cincinnati to 52.0 percent in San Jose. The mean cost of dental services in 1989 among users of such services was lowest in Cincinnati ($375) and highest in Baltimore ($614). The Cincinnati MHSP appears to focus primarily on providing basic, lower cost dental care, while the Baltimore MHSP appears to be providing a substantial amount of higher cost dental services. In Cincinnati, 44.9 percent of the MHSP dental patients had dental costs of $100 or less, while the corresponding percentage in Baltimore was 24.2 percent. Baltimore had the highest percentage of MHSP dental patients with dental costs of over

[16]For example absent the demonstration, some beneficiaries may not have had some prescriptions filled or may not have obtained the prescribed refills due to economic hardship.

TABLE III.9

USE AND COST OF MHSP DENTAL SERVICES, 1989

	All MHSP Users in 1989	Users of MHSP Physician Services in 1989	Users of the MHSP in 1989 for Ancillary Services Only
Percentage Who Used MHSP Dental Services			
All cities	43.7	33.1	60.2
Baltimore	43.0	33.3	59.0
Cincinnati	36.6	22.9	67.5
Milwaukee	38.6	24.3	52.5
San Jose	52.0	41.1	70.9
Mean Cost of MHSP dental services among beneficiaries who used such services (dollars)			
All cities	579	549	605
Baltimore	614	566	660
Cincinnati	375	394	360
Milwaukee	528	484	548
San Jose	562	559	566
Percent distribution of MHSP dental costs among beneficiaries who used MHSP dental services (dollars)			
All Cities			
1 - 100	27.2	26.5	27.8
101 - 250	21.3	23.8	19.1
251 - 500	13.2	13.7	12.7
501 - 1,000	17.3	16.0	18.4
over 1,000	21.1	19.9	22.1
Baltimore			
1 - 100	24.2	25.1	23.5
101 - 250	20.0	22.9	17.3
251 - 500	11.8	12.1	11.5
501 - 1,000	18.8	16.8	20.6
over 1,000	25.2	23.2	27.2
Cincinnati			
1 - 100	44.9	45.4	44.4
101 - 250	16.8	16.4	17.0
251 - 500	a.4	9.7	7.4
501 - 1,000	16.8	12.1	20.4
over 1,000	13.2	16.4	10.7

TABLE III.9 (continued)

	All MHSP Users in 1989	Users of MHSP Physician Services in 1989	Users of the MHSP in 1989 for Ancillary Services Only
Milwaukee			
1 - 100	38.1	37.2	38.5
101 - 250	17.3	20.6	15.8
251 - 500	15.2	15.6	15.0
501 - 1,000	14.7	12.8	15.5
over 1,000	14.7	13.8	15.2
San Jose			
1 - 100	24.7	22.9	26.5
101 - 250	27.7	28.6	26.8
251 - 500	16.6	17.8	15.4
501 - 1,000	15.1	15.8	14.5
over 1,000	15.9	14.9	16.8

$1,000 (25.2 percent), followed by San Jose (15.9 percent), Milwaukee (14.7 percent), and Cincinnati (13.2 percent).

Beneficiaries who use MHSP clinics for ancillary services only are much more likely to obtain MHSP dental services than are beneficiaries who use the clinics for physician services. As shown in Table 111.10, 60.2 percent of all beneficiaries who used MHSP clinics in 1989 for ancillary services only obtained dental services from the clinics, whereas only 33.1 percent of the beneficiaries who used MHSP physician services also obtained dental services from the clinics. This pattern was observed in each of the four cities. For the demonstration as a whole, beneficiaries who used the clinics for ancillary services only received somewhat more costly dental services on average than other MHSP patients, but this was not true in every city.

7. Geographic Concentration of MHSP Users

The data presented above indicate that substantial numbers of beneficiaries use MHSP clinics for ancillary services only. In this section, we investigate whether such beneficiaries live over a more widely dispersed area within each city than beneficiaries who use MHSP physician services. One might expect this to be true if users of the MHSP clinics for ancillary services only have higher incomes on average than other MHSP users (as we might infer from their decision to use only non-MHSP physicians). Thus, users of the MHSP clinics may be more likely than other MHSP users to live in neighborhoods outside the immediate vicinity of the clinics, but travel to the clinics to obtain the free dental care and other ancillary services.

To investigate the geographic distribution of the two classes of MHSP users in each city, we examined their distribution by zip code of residence. In each city, we found that the zip codes which contain the largest proportion of users of MHSP physician services also tend to contain large

TABLE III.10

GEOGRAPHIC CONCENTRATION OF MHSP USERS
BY ZIP CODE, 1989

	All MHSP Users in 1989	Users of MHSP Physician Services in 1989	Users of the MHSP in 1989 for Ancillary Services Only
Two Zip-Code Concentration Index			
Baltimore	28.4	32.0	23.5
Cincinnati	25.5	29.7	24.0
Milwaukee	29.5	33.4	28.3
San Jose	26.4	26.3	26.6
Five Zip-Code Concentration Index			
Baltimore	53.2	54.2	52.6
Cincinnati	48.3	49.9	47.4
Milwaukee	56.0	60.4	54.9
San Jose	50.5	53.2	46.8
Ten Zip-Code Concentration Index			
Baltimore	78.8	80.2	76.5
Cincinnati	68.0	69.8	66.7
Milwaukee	80.8	83.9	78.0
San Jose	69.0	71.8	68.1

NOTE: The two zip-code concentration index is the percentage of MHSP users who live in the two zip codes which contain the largest number of MHSP users. The five zip-code and ten zip-code concentration indexes are defined analogously. The zip codes which contain the largest number of MHSP users were specified separately for each category of user (that is, all users, users of physician services, and users of ancillary services only).

proportions of users of ancillary services only.[17] However, beneficiaries who use the MHSP for ancillary services only are less heavily concentrated in those zip codes and are somewhat more broadly dispersed throughout the city. To summarize the geographic concentration of each class of MHSP user with each city, we computed various "zip code concentration indexes." A two zip code concentration index was defined as the percentage of all MHSP users in a given class who live in the two zip codes which contain the largest percentage of MHSP users within that class. (The two classes of users are those who use MHSP physician services and those who use MHSP clinics for ancillary services only.) Five zip code and ten zip code concentration indexes were defined analogously.

These measures indicate that users of MHSP physician services are more heavily concentrated within certain areas of each city, while users of the MHSP for ancillary services only are somewhat more broadly dispersed. For example, 32.0 percent of the users of MHSP physician services in Baltimore live in the two zip codes containing the highest proportion of such users, while only 23.5 percent of the users of the MHSP for ancillary services only live in the two zip codes containing the highest proportion of such users (Table 111.10). A similar pattern exists when we expand the measure of geographic concentration to include five zip codes and ten zip codes. Similar results are also obtained for each of the other cities.[18]

8. Use of MHSP and Non-MHSP Physician Services By MHSP Users

In this section, we examine the use of MHSP and non-MHSP physician services by MHSP users. One objective of this analysis is to investigate the users of MHSP physician services to better understand the amount and types of physician services they obtain outside the clinics. Such beneficiaries are free to obtain physician services outside the MHSP clinics any time they choose,

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"Distributions by zip code of residence for all MHSP users, users of MHSP physician services, and users of MHSP ancillary services only are shown in Appendix Tables A4 through A7 for the four cities.

[18]The one exception is San Jose, where the two zip code concentration index for the two classes of MHSP users is similar. The indexes based on five and ten zip codes are both similar to the results for Baltimore, however.

although they are subject to the standard Medicare cost-sharing requirements for Part B services when they do so. Another objective is to better understand the amount and types of physician services used by beneficiaries who use MHSP clinics for ancillary services only. Evidence presented above revealed that the vast majority of such individuals have had no prior relationship with MHSP physicians.

The analysis presented in this section was limited to Baltimore and Milwaukee, since these are the two cities for which we obtained detailed Medicare Part B claims data. One limitation of this analysis is that these data do not capture all visits to non-MHSP physicians. Visits for services not covered by Medicare--such as routine physical exams--are not included in the data. In addition, the claims data probably do not fully capture the use of covered physician services by sample members, since there is evidence that some claims for covered services are never submitted to Medicare." In contrast, the MHSP claims are submitted to HCFA by the MHSP clinics and should include all visits to MHSP physicians, including those for routine physical exams and other services not covered under the regular Medicare program.

During our case study analysis, we discovered that there is some confusion about whether visits by MHSP physicians in settings outside the clinics (such as inpatient hospital settings or patient's homes) should be billed under the demonstration or should be billed under the regular Medicare program. The clinics have apparently been billing for such visits under the regular Medicare program, although the demonstration rules allow such visits to be billed under the demonstration. In fact, the MHSP claim forms allow separate codes for physician visits in the clinic, in the patient's home, and in a hospital. On the MHSP claims for Baltimore and Milwaukee, all physician visits were coded as having occurred in the clinic. This has the following implications for our analysis. First, for office visits, we can distinguish visits with MHSP physicians from visits with non-MHSP physicians, since the

[19]For example, some beneficiaries fail to submit claims for small amounts if they have not met the Part B deductible for the year. Some beneficiaries have also reported that they sometimes do not submit a claim to Medicare because doing so is too time-consuming or confusing (Nelson et al., 1989).

former are billed under the demonstration and the latter are billed under the regular Medicare program. For visits in other settings, however, we cannot distinguish between those provided by MHSP physicians from those provided by non-MHSP physicians, since both types of visits have been billed under the regular Medicare program.

In 1989, users of MHSP physician services in Baltimore had an average of 9.67 physician visits during the year (Table III.1 1). This includes visits to MHSP and non-MHSP physicians; 54.4 percent of their visits were billed under the demonstration. Such beneficiaries appear to be relying primarily on the MHSP clinics for their office-based care, as nearly three-quarters of their office visits were to MHSP clinics. Fewer than half of these beneficiaries had an office visit with a non-MHSP physician. A similar pattern is observed among users of MHSP physician services in Milwaukee. About two-thirds of the office visits among such beneficiaries are to the MHSP clinics, and about half had an office visit with a non-MHSP physician. Users of MHSP physicians thus appear to be obtaining a significant proportion of their office-based care within the clinics.

Beneficiaries who used the Baltimore MHSP in 1989 for ancillary services only had an average of 6.82 non-MHSP physician visits in 1989. Over three-quarters of such beneficiaries had at least one physician visit during the year, and over two-thirds had at least one non-MHSP office visit during the year. This segment of the MHSP user population had an average of 3.93 non-MHSP office visits during 1989. Similar results were found for Milwaukee, where the average number of non-MHSP office visits in 1989 for this segment of the MHSP user population was 4.70. Thus, in both cities, beneficiaries who are using the MHSP clinics for ancillary services only are obtaining a significant amount of office-based care from non-MHSP providers.

For Milwaukee, we can classify non-MHSP physician services by physician specialty using the detailed Part B claims we obtained from the carrier.[20] In 1989, beneficiaries who used the Milwaukee MHSP for ancillary services only had an average of 0.92 visits with non-MHSP physicians

[20]The detailed Part B claims data we obtained for Baltimore do not include a physician specialty code.

TABLE III.1 1

UNADJUSTED DIFFERENCES IN PHYSICIAN VISIT RATES BETWEEN USERS OF MHSP PHYSICIAN SERVICES AND USERS OF MHSP CLINICS FOR ANCILLARY SERVICES ONLY, 1989

	Baltimore		Milwaukee	
	Users of MHSP Physician Services in 1989	Users of the MHSP in 1989 for Ancillary Services Onlv	Users of MHSP Physician Services in 1989	Users of the MHSP in 1989 for Ancillary Services Onlv
Mean number of physican visits in 1989				
Total	9.67	6.82 **	10.14	7.53 **
Non-MHSP	4.41	6.82 **	5.32	7.53
MHSP	5.26	0 **	4.82	0 **
Office	7.09	3.93 **	7.10	4.70 **
Non-MHSP	1.83	3.93 **	2.28	4.70 **
MHSP	5.26	0 **	4.82	0 **
Inpatient hospital	1.90	2.10	2.18	2.10
Home	0.03	0.05 **	0.01	0.01
Hospital ER/OPD	0.41	0.45	0.57	0.53
Percent with a physician visit in 1989				
Any setting	100.0	75.8 **	100.0	823
Office	100.0	68.7 **	100.0	77.9
Non-MHSP office	43.6	68.7 **	51.7	77.9
Inpatient hospital	15.4	16.1	17.5	16.3
Home	1.1	1.9 **	0.3	0.6
Hospital OPD/ER	22.3	22.7	30.4	27.1 *
Sample size	8,759	5,250	1,795	1,845

SOURCE: Medicare Part B claims and MHSP claims.

*The two groups of MHSP users are significantly different at the .05 level.
**The two groups of MHSP users are significantly different at the .01 level.

in family or general practice, 2.22 visits with non-MHSP physicians in internal medicine, 1.58 visits with non-MHSP specialists, and 2.17 visits with physicians in a clinic or group practice where the specialty code of the individual physician was not identified on the claim (Table 111.12). About 18.2 percent of these beneficiaries had at least one visit in 1989 with a general or family practitioner, 32.5 percent had a visit with an internist, 37.3 percent had a visit with a specialist, and 43.2 percent had a visit with a physician in a clinic or group practice where the specialty code of the individual physician was not identified on the claim. The large number of beneficiaries in the final category limits our ability to determine the extent to which these beneficiaries were receiving primary care rather than specialty care from non-MHSP physicians. Nevertheless, from the percentages who visited general and family practitioners and internists, it is clear that a significant percentage of beneficiaries who used the Milwaukee MHSP in 1989 for ancillary services only obtained primary care services that year from non-MHSP physicians.

D. DESCRIPTIVE COMPARISONS OF MHSP USERS AND NONUSERS

In this section, we present descriptive comparisons of MHSP users and nonusers with respect to demographic characteristics, service use, and Medicare costs. The results in the previous section showed that MHSP users can be grouped into two distinct categories: (1) those who use the MHSP for ancillary services only and (2) those who use the MHSP for physician services as well as ancillary services. The cost-effectiveness of the MHSP Demonstration is likely to differ for these two groups, since they receive a different mix of MHSP services. We have therefore analyzed them separately.

Our analysis focuses on beneficiaries who used MHSP services in 1989. For the analysis of users of MHSP physician services, we defined the comparison group as MHSP nonusers who had positive Medicare payments in 1989--that is, those who used enough Medicare-covered services to exceed the Part B deductible ($75 in 1989). For the analysis of users of the MHSP for ancillary services only, however, we defined the comparison group as all MHSP nonusers who were alive at the start of 1989, regardless of whether they had positive Medicare payments during the year. We chose not to restrict

, TABLE III.12

USE OF NON-MHSP PHYSICIAN SERVICES
AMONG MHSP USERS IN MILWAUKEE,
BY SPECIALTY (1989)

	Users of MHSP Physician Services in 1989	Users of the MHSP in 1989 for Ancillary Services Only
Mean number of non-MHSP physician visits in 1989, by specialty		
Family and general practice	0.44	0.92 **
Internal medicine	1.54	2.22 **
Specialists	1.64	1.58
Group practices and clinics	1.42	2.17 **
Percent with a visit to a non-MHSP physician in 1989, by specialty		
Family and general practice	8.0	18.2 **
Internal medicine	20.4	32.5 **
Specialists	36.8	37.3
Group practices and clinics	36.6	43.2 **

*The two groups of MHSP users are significantly different at the .05 level, two-tailed test.

**The two groups of MHSP users are significantly different at the .01 level, two-tailed test.

the comparison group for this portion of the analysis to beneficiaries who exceeded the Part B deductible, because not all beneficiaries who used the MHSP strictly for ancillary services in 1989 received physician services that year--and we cannot assume that they would have done so in the absence of the MHSP Demonstration.

1. Demographic Characteristics

Beneficiaries who used MHSP physician services in 1989 had a significantly different demographic profile than MHSP nonusers who had positive Medicare payments in 1989. The users of MHSP physician services were less likely to be under age 65 and disabled, less likely to be over age 85, and less likely to be covered by both Medicare and Medicaid (Table 111.13). Each of these differences in demographic characteristics lead us to expect lower Medicare costs for MHSP users than nonusers, since Medicare beneficiaries who are older, disabled, or covered by Medicaid tend to be higher users of health care services than other beneficiaries. These differences are controlled for statistically in the estimates presented below of the effect of the demonstration on Medicare costs. The findings for individual cities are identical to the findings for the demonstration as a whole, except: (1) users of MHSP physician services in Cincinnati are more likely than nonusers to be under 65 and disabled, and (2) users of MHSP physician services in San Jose are more likely than nonusers to be covered by Medicaid. In general, the differences between users of the MHSP for ancillary services only and MHSP nonusers are similar to those just described for users of MHSP physician services.

The differences between MHSP users and nonusers in demographic characteristics may be due in part to the fact that MHSP clinics are not likely to be used by residents of nursing homes or other long-term care facilities. We cannot determine how much this contributes to the observed differences, however, because most beneficiaries in long-term care institutions cannot be identified in our data. We can identify beneficiaries who had Medicare claims for skilled nursing facility (SNF) care--the only type of nursing home care covered by Medicare--but we cannot identify beneficiaries

TABLE III.13

COMPARISON OF DEMOGRAPHIC CHARACTERISTICS
OF MHSP USERS AND NONUSERS, 1989

	Users of MHSP Physician Services in 1989	Users of the MHSP in 1989 for Ancillary Services Only	MHSP Nonusers with Positive Medicare Payments in 1989	All MHSP Nonusers Alive at the Start of 1989
All Cities				
Age distribution				
< 65 (disabled)	7.6 **	10.6 **	13.0	14.1
65 - 75	52.4	54.0	44.3	45.8
76 - 85	34.3	30.3	32.1	30.4
86 and over	5.7	5.2	10.6	9.7
Percent female	62.3 *	59.1 **	61.3	58.5
Percent on Medicaid	10.4 **	14.4 **	20.3	18.2
Baltimore				
Age distribution				
< 65 (disabled)	5.1 **	9.6 **	12.7	13.7
65 - 75	56.4	57.0	45.5	46.9
76 - 85	33.6	28.6	31.6	30.0
86 and over	4.9	4.8	10.2	9.4
Percent female	62.5 **	60.5 **	61.0	57.9
Percent on Medicaid	5.2 **	12.8 **	20.0	17.7
Cincinnati				
Age distribution				
< 65 (disabled)	18.9 **	25.7 **	13.4	14.8
65 - 75	47.8	43.6	44.1	44.8
76 - 85	28.5	25.4	32.8	31.8
86 and over	4.8	5.2	9.7	8.7
Percent female	64.6	64.1	62.0	59.2
Percent on Medicaid	10.0 **	12.7	14.4	12.6
Milwaukee				
Age distribution				
< 65 (disabled)	14.3 **	13.4 **	18.2	18.9
65 - 75	48.4	51.9	41.7	43.0
76 - 85	32.0	31.5	31.0	29.6
86 and over	5.2	3.2	9.1	8.6

TABLE 111.13 (continued)

	Users of MHSP Physician Services in 1989	Users of the MHSP in 1989 for Ancillary Services Only	MHSP Nonusers with Positive Medicare Payments in 1989	All MHSP Nonusers Alive at the Start of 1989
Milwaukee (continued)				
Percent female	59.4	55.4 *	61.1	58.6
Percent on Medicaid	10.6 **	12.8 **	19.7	18.2
San Jose				
Age distribution				
< 65 (disabled)	7.2 **	7.1 **	8.3	9.9
65 - 75	44.5	49.0	43.5	45.4
76 - 85	39.9	35.4	34.7	32.2
86 and over	8.5	8.5	13.5	12.4
Percent female	62.7	58.0	62.4	60.0
Percent on Medicaid	25.9 **	21.6	24.0	21.6

NOTES: Each of the variables in this table is categorical, so the statistical significance of differences between MHSP users and nonusers was assessed using the chi-square test. In the case of age, we tested whether the percentage distribution of MHSP users across the four categories differed significantly from that of MHSP nonusers.

In the statistical tests, users of MHSP physician services were compared with MHSP nonusers who had positive Medicare payments in 1989. Users of the MHSP for ancillary services only were compared with all MHSP nonusers alive at the start of 1989.

*The difference between MHSP users and nonusers is statistically significant at the .05 level.
**The difference between MHSP users and nonusers is statistically significant at the .01 level.

who live in nursing homes providing intermediate care or in facilities providing custodial care. These latter beneficiaries are typically institutionalized for longer periods of time than users of SNF services, and are the least likely to be users of MHSP clinics.

2. Service Use and Medicare Costs

In this section, we present descriptive data on service use and Medicare costs for MHSP users and nonusers. These figures have not been adjusted for differences between the two groups in demographic characteristics or other factors associated with the need for health care, so they do not measure the effects of the demonstration on Medicare costs. These descriptive data are presented to provide a picture of the total Medicare costs incurred for MHSP users and nonusers, and to serve as background for the multivariate analysis described below.

In 1989, users of MHSP physician services cost the Medicare program an average of $4,665, which was 9.6 percent below the average cost of $5,159 incurred for MHSP nonusers who had positive Medicare payments during the year (see Appendix Table A.8).[21] Users of MHSP physician services had 38 percent lower costs for Part A services on average than MHSP nonusers ($2,172 versus $3,350). This large difference was due primarily to much lower inpatient hospital costs for MHSP users, but MHSP users also had significantly lower costs for SNF, home health, and other Part A services.[22] When the costs of MHSP services are included with the costs of other Part B services, users of MHSP physician services had 53 percent higher Part B costs on average than MHSP nonusers ($2,492 versus $1,629).

Determining how much of these unadjusted differences between MHSP users and nonusers in average Medicare costs is due to the effects of the demonstration rather than to pre-existing

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[21] As described above, the comparison group for the analysis of users of MHSP physician services in 1989 consists of MHSP nonusers who had positive Medicare payments in 1989. To simplify the exposition, we often refer to this group simply as "MHSP nonusers."

[22] Other Part A services include those provided by psychiatric hospitals, rehabilitation hospitals, and hospices.

differences in health status is difficult given that the MHSP has been operational for over 10 years. For beneficiaries who have been using MHSP clinics for many years, we cannot determine definitively whether their lower average costs for Part A services primarily reflect improvements in their health attributable to the MHSP, or whether they would have been in better health even without the MHSP. The data presented above on demographic characteristics, which showed that MHSP users are less likely than nonusers to be under age 65 and disabled, less likely to be over age 85, and less likely to be covered by Medicaid, suggest that MHSP users would have had lower average Medicare costs than nonusers absent the demonstration. Without data on pre-existing health status, however, it is difficult to determine how much MHSP users and nonusers would have differed in average Medicare costs without the MHSP.

To investigate the nature of the pre-existing differences between MHSP users and nonusers in health status and Medicare costs, we have examined users of MHSP physician services who began using the MHSP in 1989, and compared their Medicare costs during the two previous years with that of MHSP nonusers (again focusing on MHSP nonusers who had positive Medicare payments in 1989). This analysis of new MHSP users enables us to investigate whether MHSP clinics are attracting Medicare patients who were lower users of Medicare services than MHSP nonusers even before they began receiving MHSP services. Of the 14,337 beneficiaries in our sample who used MHSP physician services in 1989, 1,108 began using the MHSP that year.[23]

In 1989, the average cost of all Medicare services provided to beneficiaries who began using MHSP physician services that year was $4,184, or 19 percent below the MHSP nonuser average of $5,159 (Table 111.14). In the two years before they began using MHSP physician services, MHSP users had even lower average Medicare costs relative to nonusers. New users of MHSP physician services in 1989 had average Medicare costs that were 29 percent below that of nonusers in 1987 and 37 percent below that of nonusers in 1988. The differences in prior costs were greater for Part A

[23]We identified these beneficiaries as those who used MHSP physician services in 1989, but did not use any MHSP services in 1987 or 1988.

TABLE III.14

PRE/POST COMPARISONS OF SERVICE USE AND COST FOR NEW USERS OF MHSP PHYSICIAN SERVICES IN 1989 AND MHSP NONUSERS WITH POSITIVE MEDICARE PAYMENTS IN 1989

	Users of MHSP Physician Services Who Began Using the MHSP in 1989	MHSP Nonusers With Positive Medicare Payments in 1989	User-Nonuser Ratio
All **Cities**			
Mean total Medicare expenditure			
1989 (Followup)	$4,184	$5,159	0.81 **
1988 (Baseline)	2,365	3,727	0.63 **
1987 (Baseline)	1,884	2,648	0.71 **
Mean Part A expenditure			
1989	2,142	3,530	0.61 **
1988	1,372	2,452	0.56 **
1987	1,130	1,681	0.67 **
Mean Part B expenditure'			
1989	2,043	1,629	1.25 **
1988	993	1,275	0.78 **
1987	754	967	0.78 **
Hospital admissions per 1,000 beneficiaries			
1989	336	490	0.69 **
1988	240	403	0.60 **
1987	216	319	0.68 **

NOTE: The sample of MHSP users consists of beneficiaries who began using the MHSP in 1989 and had at least one visit with an MHSP physician in 1989. There are 1,108 such beneficiaries in the sample--539 in Baltimore, 78 in Cincinnati, 177 in Milwaukee, and 314 in San Jose.

*Significantly different from zero at the .05 level, two-tailed test.

**Significantly different from zero at the .01 level, two-tailed test.

'In 1989, Part B expenditures include the cost of MHSP services.

services than for Part B services. New users of MHSP physician services in 1989 had average Part A costs that were 33 percent below the nonuser average in 1987 and 44 percent below the nonuser average in 1988. A difference of similar magnitude (39 percent) persisted in 1989, the first year of MHSP use. Similar differences across the three years are observed for hospital admission rates. The average cost of Part B services for the MHSP user sample was 22 percent below the nonuser average in both 1987 and 1988. In 1989, however, new MHSP patients increased their average total Part B cost to a value 25 percent higher than the nonuser average. (The total cost of Part B services includes the cost MHSP services as well as non-MHSP Part B services.) The average cost of all MHSP services provided to new users of MHSP physician services in 1989 was $741, of which $173 was for routine care and $568 was for ancillary services.[24]

These findings on new users of MHSP physician services in 1989 provide two useful insights concerning the cost-effectiveness of the MHSP Demonstration. First, the beneficiaries who began using MHSP clinics in 1989 had previously been much lower users of Medicare services than MHSP nonusers. While we cannot be certain that this has been the case throughout the history of the MHSP, it is unlikely that MHSP clinics began attracting Medicare patients in 1989 who were dramatically different from those attracted previously. This suggests that the much lower average Part A cost for the entire cross-section of users of MHSP physician services in 1989 relative to MHSP nonusers may be due primarily to pre-existing differences in health status.

The second conclusion from the descriptive analysis of new users of MHSP physician services is that the MHSP appears to increase Medicare costs for beneficiaries in their first year of program participation. The average Part B cost for new users of MHSP physician services in 1989 increased dramatically relative to that of nonusers, due to the costs of the MHSP services provided. This was

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"New users of MHSP physician services in 1989 had lower MHSP costs on average than the entire cross-section of *all* users of MHSP physician services in 1989. The average cost of all MHSP services for the latter group was $1,313, of which $285 was for routine care and $1,028 was for ancillary services.

not offset by a reduction in the average Part A cost of users relative to nonusers, however, so the average total cost for users increased relative to that of nonusers. Of course, the MHSP services provided to patients in their first year of program participation may reduce costs for Medicare services in future years.

We next compared the average Medicare costs of beneficiaries who used the MHSP in 1989 for ancillary services only with the average costs of all MHSP nonusers alive at the start of 1989. The difference between these two groups in average total Medicare cost in 1989 was not statistically significant (see Appendix Table k9). The MHSP users had significantly lower average Part A costs than the nonusers but significantly higher average Part B costs. These results for the demonstration as a whole were also found for each city. These comparisons have not been adjusted for differences between the two groups in demographic characteristics or other factors associated with the use of health care services.

To investigate whether users of the MHSP for ancillary services only had lower average Part A costs than MHSP nonusers before entering the MHSP, we examined the subset of such MHSP users who began using the MHSP in 1989.[25] In 1989, the average Part A cost for new users of the MHSP for ancillary services only was 32 percent below the nonuser average (Table 111.15). In the year prior to entering the MHSP, the average Part A cost for this subgroup of MHSP users was 23 percent below the nonuser average, but in the previous year the difference between the two groups in the average Part A cost was not statistically significant. Thus, the average Part A cost of this segment of new MHSP users in 1989 had been declining relative to that of nonusers prior to their entry into the MHSP. We cannot determine from the descriptive data whether the decline in average Part A costs for this segment of new MHSP users relative to nonusers from 1988 to 1989 was the continuation of a previous trend. It seems unlikely, however, that receiving such ancillary services as dental care would cause an immediate reduction in Part A costs. The two groups had similar

[25] Of the 9,198 users of the MHSP for ancillary services only in our sample, 3,303 began using the MHSP in 1989--that is, they had no claims for MHSP services in 1987 or 1988.

TABLE III.15

PRE/POST COMPARISONS OF SERVICE USE AND COST
FOR NEW USERS OF MHSP ANCILLARY SERVICES ONLY
IN 1989 AND MHSP NONUSERS

	Users of MHSP Ancillary Services Only Who Began Using the MHSP in 1989	MHSP Nonusers	User-Nonuser Ratio
All Cities			
Mean total Medicare expenditure			
1989	$3,685	4,029	0.91 *
1988	2,614	3,022	0.86 **
1987	2,075	2,189	0.95
Mean Part A expenditure			
1989	1,869	2,757	0.68 **
1988	1,529	1,988	0.77 **
1987	1,250	1,393	0.90
Mean Part B expenditure			
1989	1,816	1,273	1.43 **
1988	1,085	1,034	1.05
1987	824	796	1.04
Hospital admissions per 1,000 beneficiaries			
1989	317	382	0.83 **
1988	305	329	0.93
1987	251	265	0.95

NOTE: The sample of MHSP users consists of beneficiaries who began using the MHSP in 1989 and who used the MHSP for ancillary services only. There are 3,303 such beneficiaries in the sample--1,891 in Baltimore, 183 in Cincinnati, 708 in Milwaukee, and 521 in San Jose.

*Significantly different from zero at the .05 level, two-tailed test.

**Significantly different from zero at the .01 level, two-tailed test.

average Part B costs in 1987 and 1988, but the cost of MHSP ancillary services received in 1989 caused the average Part B cost for users to increase to a value 43 percent higher than the nonuser average. The average cost of MHSP services provided to new users of the MHSP for ancillary services only in 1989 was $564.

E. DETERMINING THE EFFECT OF THE MHSP ON MEDICARE COSTS

The effect of the MHSP Demonstration on Medicare costs is the difference between the costs incurred for MHSP users and the costs that would have been incurred for them in the absence of the demonstration. Estimating the latter is difficult for a demonstration such as the MHSP that has been operational for over 10 years. The MHSP Demonstration was not implemented with a randomized experimental design, so we have estimated its effects on Medicare costs by comparing the costs incurred for MHSP users with those incurred for a comparison group of MHSP nonusers. This requires determining how much of the difference in costs between the two groups is due to the effects of the demonstration, and how much of it reflects differences that would have occurred in the absence of the demonstration--due, for example, to pre-existing differences in health status or care-seeking behavior. To control for such pre-existing differences between MHSP users and nonusers, we have used multivariate regression analysis.

Because of the lack of a randomized experimental design and data limitations, we cannot be totally confident that our regression models have fully controlled for pre-existing differences between MHSP users and nonusers. The regression results should therefore be interpreted as estimates of how the Medicare costs of MHSP users and nonusers differ, after controlling for differences between the two groups in certain observable characteristics (specified below). The regression results do not provide definitive estimates of the effects of the MHSP Demonstration on Medicare costs, but together with the descriptive results presented above, provide the best possible basis for assessing whether the MHSP Demonstration is cost-effective.

1. Methodology

Multivariate regression models were used to assess the effects of the MHSP Demonstration on Medicare costs in 1989. We used the full sample of beneficiaries who used MHSP services in 1989, but conducted separate analyses of users of MHSP physician services and users of MHSP ancillary services only. The basic form of the regression models we used was as follows:

$$Y = \beta_0 + \beta_1 X + \beta_2 M + u$$

where:

Y is a measure of service use or cost in 1989

X is a vector of control variables

M is a binary variable equal to 1 for MHSP users and 0 for the comparison group

u is a random disturbance term

β_0, β_1, and β_2 are parameters to be estimated

If the variables in X fully control for pre-existing differences between MHSP users and the comparison group, the estimated value of β_2 provides an estimate of the effect of the MHSP on the outcome variable Y. Each model was estimated separately for each city and for all four cities combined, thus yielding city-specific estimates and estimates for the demonstration as a whole.

The models were estimated using ordinary least squares (OLS) regression techniques. We used OLS models rather than the two-part model which has been used in some studies of health care costs for the nonelderly population (Duan et al. 1982), because OLS models have been shown to yield more accurate predictions of health care expenditures for the Medicare population (Hill et al. 1992).

a. Variables Used in the Regression Models

The outcome variables in the regression models include total costs for Medicare services as well as costs classified by type of service (total Part A, total Part B, inpatient hospital, outpatient hospital and emergency room, home health, and SNF). The number of hospital admissions was also used as

an outcome variable. For MHSP users, total Medicare costs and total Part B costs include the costs of services received from both MHSP and non-MHSP providers.

The control variables used in our regression analysis include measures of the following demographic characteristics: age, reason for Medicare entitlement, sex, race, enrollment in 'Medicaid, and original reason for Medicare entitlement. Age and reason for Medicare entitlement were included in our models using five binary variables: less than 65 years of age (disabled), 70-74, 75-79, 80-84, and 85 and over.[26] The 65-69 age group was the excluded (reference) category. Race was included in our models using two binary variables, one for blacks and one for individuals whose race was classified as other; whites were the reference category. Medicaid enrollment was captured by a binary variable indicating whether the person was enrolled in both Medicare and Medicaid. A binary variable was also included indicating whether the person was at least 65 years of age but had been originally entitled to Medicare due to disability before turning 65. This variable was included because such beneficiaries have higher average Medicare costs than other beneficiaries age 65 and over.

It is also important to control for pre-existing differences between MHSP users and nonusers in the need for health care. Our analysis of new MHSP users described above found that MHSP users had significantly lower Medicare costs than nonusers before they began using the MHSP. For example, among beneficiaries who began using MHSP physician services in 1989, the mean Part A expenditure in 1988 (the year before they began using the MHSP) was 44 percent below the mean for nonusers, and the mean Part B expenditure was 22 percent below the mean for nonusers (see Table III.14 above). A similar differential existed in 1987--i.e., two years before the new user sample entered the MHSP. Thus, the MHSP is attracting beneficiaries who were significantly lower users of Medicare services than the comparison group before they began receiving MHSP services. As we

[26]Beneficiaries in our sample were entitled to Medicare either because they were disabled (and under age 65) or because they were at least 65 years of age. As discussed previously, ESRD beneficiaries were excluded from the sample.

discuss below, these differences between users and nonusers in prior Medicare costs are much larger than can be accounted for by differences in demographic characteristics.

The sample for which we seek to estimate the cost-effectiveness of the MHSP consists of the cross-section of all MHSP users in 1989, not just those who began using the MHSP in 1989. To control for differences between MHSP users and nonusers in the need for health care, we specified three control variables to measure the presence of chronic health conditions predictive of high Medicare costs in 1989: (1) hospitalization two or more times during 1987438, (2) use of home health services in 1988, and (3) use of home health services in both 1987 and 1988. We also included a control variable indicating whether the sample member died during 1989. This was included as a control variable because the period immediately preceding death is often characterized by very high Medicare costs. Expenditures for Medicare services in years prior to 1989 are not suitable control variables, because expenditures in prior years for MHSP users are affected by whether MHSP services were used.

A potential problem with controlling for differences between MHSP users and nonusers in the need for health care is that, to estimate the full effect of the demonstration, one should control for differences in the need for care that would have existed in the absence of the demonstration. For long-time users of MHSP clinics, the need for care in 1989 may have been influenced by past use of MHSP services. That is, prior use of MHSP primary and preventive care services may have improved beneficiaries' health status, thus reducing their need for care. Our models yield estimates of the effect of the demonstration on service use and Medicare costs in 1989, controlling for differences between MHSP users and nonusers in measures of their need for care at the start of 1989. From this perspective, our models may not fully measure the long-term potential of the MHSP to reduce costs through improvements in health status. On the other hand, however, the findings of a separate analysis of new MHSP users discussed immediately below indicate that the differences between MHSP users and nonusers in the need for health care are so large and so fundamental that they

cannot be fully controlled for through regression analysis. Specifically, this analysis of new users provides evidence that regression estimates are likely to overestimate the extent of any savings attributable to the MHSP. Our regression analysis thus suffers from two potential biases working in opposing directions.

b. Test of the Regression Models Using the Sample of New MHSP Users

Before estimating the regression models specified above on the full sample of MHSP users in 1989, we first conducted a set of regression analyses using the subset of MHSP users who began receiving MHSP services for the first time in 1989. Data on prior Medicare expenditures for new MHSP users enable us to investigate whether the differences between MHSP users and the comparison group in the need for care can be controlled for through regression analysis. Using the sample of new MHSP users and the comparison sample of nonusers, we estimated regression models of the type specified above, except that the dependent (left-hand side) variable was a measure of service use or cost in 1988--the year before the new user sample began using the MHSP. As control variables, we included the measures of demographic characteristics specified above as well as two variables measuring Part A and Part B expenditures in the previous year (1987).[27] The model also included a binary variable equal to 1 for beneficiaries who began using the MHSP in 1989 and equal to 0 for the comparison group. If the independent variables in the model fully control for differences between the two groups, the estimated coefficient on the MHSP binary variable should not be significantly different from zero, because the outcome variables in this analysis measure service use in 1988, the year before the sample of new MHSP users was exposed to the MHSP.

We found that even after controlling for the demographic characteristics and measures of prior expenditures discussed above, the new MHSP users in 1989 had significantly lower Medicare costs in 1988 (the year before they began using the MHSP) than nonusers. For beneficiaries who began

[27]We also estimated other specifications of the model in which Medicare expenditures in 1987 were replaced by indicators of hospitalization two or more times in 1987 and use of home health services in 1987.

using MHSP physician services in 1989, the mean Part A expenditure in 1988 was 35 percent below the regression-adjusted mean for nonusers, and the mean Part B expenditure was 12 percent below the regression-adjusted mean for nonusers. Thus, even though the new MHSP users were not exposed to the MHSP until 1989, the regression models, if interpreted literally, imply that the MHSP significantly reduced their Medicare expenditures in 1988. These findings indicate that MHSP users are significantly lower users of Medicare services than nonusers even after controlling for differences between the two groups in demographic characteristics and prior Medicare costs. This implies that the regression estimates of the effects of the MHSP on Medicare costs in 1989 presented below are likely to overestimate any cost savings associated with the MHSP.

2. Results

In this section, we present estimates from the main regression models estimated on the entire sample of MHSP users in 1989 and the comparison sample of nonusers. The regression estimates imply that the MHSP Demonstration increased the average total Medicare cost for users of MHSP physician services in 1989 by $440, an increase of 10.4 percent (Table III.16).[28] The estimates imply that the demonstration reduced the average Part A cost for users of MHSP physician services in 1989 by $583, but this was more than offset by an estimated increase of $1,023 in the average Part B cost (including the cost of MHSP services). The estimated reduction in Part A costs was due primarily to a reduction in costs for inpatient hospital services. The estimates imply that the demonstration reduced the number of hospital admissions among users of MHSP physician services by 15 percent. The estimated percentage increase in average total Medicare costs was largest in San Jose (27.2 percent), followed by Milwaukee (17.6 percent), and Baltimore (7.2 percent). The estimated effect

[28]This estimated percentage effect of the demonstration is expressed as a percentage of the estimated Medicare costs that would have been incurred for users of MHSP physician services in the absence of the demonstration, as predicted from the regression model. Estimated regression coefficients are shown in Appendix A.

TABLE III.16

REGRESSION-ADJUSTED DIFFERENCES BETWEEN USERS OF MHSP PHYSICIAN SERVICES AND MHSP NONUSERS IN MEAN MEDICARE EXPENDITURES AND HOSPITAL ADMISSION RATES, 1989

	Medicare Expenditures and Hospital Admission Rates in 1989			
	Mean Value for Users of MHSP Physician Services	Regression-Adjusted Mean for MHSP Nonusers'	Adjusted User-Nonuser Difference	Implied Percentage Effect of the MHSP
All Cities				
Total expenditures	$4,664	$4,224	+440 *	+ 10.4
Part A expenditures	2,172	2,755	-583 **	-21.2
Part B expenditures	2,492	1,469	+1,023 **	$69.6
Inpatient hospital expenditures	2,012	2,495	-483 **	-19.4
Home health expenditures	91	108	-17 **	-15.7
SNF expenditures	36	98	-62 **	-63.3
Non-MHSP physician and medical supplier expenditures	876	1,112	-236 **	-21.2
Hospital OPD/ER expenditures	303	348	-45 **	-12.9
Hospital admissions per 1,000 beneficiaries	338	398	-60 **	-15.1
Baltimore				
Tot al expenditures	4,740	4,422	+318 *	+7.2
Part A expenditures	2,221	2,922	-701 **	-24.0
Part B expenditures	2,519	1,500	+1,019 **	+67.9
Inpatient hospital expenditures	2,076	2,674	-598 **	-22.4
Home health expenditures	99	122	-23 *	-18.9
SNF expenditures	22	76	-54 **	-71.1
Non-MHSP physician and medical supplier expenditures	899	1,143	-244 **	-21.3
Hospital OPD/ER expenditures	295	350	-55 **	-15.7
Hospital admissions per 1,000 beneficiaries	361	427	-66 **	-15.5
Cincinnati				
Total expenditures	3573	3,774	-201	-5.3
Part A expenditures	1,846	2,401	-555	-23.1
Part B expenditures	1,728	1,374	+354 **	+25.8
Inpatient hospital expenditures	1,743	2,190	-447	-20.4
Home health expenditures	30	36	-6	-16.7
SNF expenditures	50	115	-65	-56.5
Non-MHSP physician and medical supplier expenditures	670	1,023	-353 **	-34.5
Hospital OPD/ER expenditures	201	348	-147 **	-42.2
Hospital admissions per 1,000 beneficiaries	322	394	-72 *	-18.3

TABLE III.16 (*continued*)

	Medicare Expenditures and Hospital Admission Rates in 1989			
	Mean Value for Users of MHSP Physician Services	Regression-Adjusted Mean for MHSP Nonusers'	Adjusted User-Nonuser Difference	Implied Percentage Effect of the MHSP
Milwaukee				
Total expenditures	4,251	3,615	+636 **	+17.6
Part A expenditures	1,917	1517	-400 *	-26.4
Part B expenditures	2,333	1,296	+1,037 **	+80.0
Inpatient hospital expenditures	1,698	2,009	-311 *	-15.8
Home health expenditures	69	63	+6	-15.5
SNF expenditures	32	107	-75 *	+9.5
Non-MHSP physician and medical supplier expenditures	731	880	-149 **	-70.1
Hospital OPD/ER expenditures	359	418	-59	-16.9
Hospital admissions per 1,000 beneficiaries	325	386	-61 **	-14.1
San Jose				
Total expenditures	5,034	3,956	+1,078 **	+27.2
Part A expenditures	2,283	2,455	-172	-7.0
Part B expenditures	2,741	1,497	+1,250 **	+83.5
Inpatient hospital expenditures	2,098	2,187	-89	-4.1
Home health expenditures	96	115	-19	-16.5
SNF expenditures	75	1 3 8	-63 *	-45.1
Non-MHSP physician and medical supplier expenditures	962	1,195	-233 **	-19.5
Hospital OPD/ER expenditures	324	304	i-20	+6.6
Hospital admissions per 1,000 beneficiaries	282	306	-24	-7.8

*Significantly different from zero at the .05 level, two-tailed test.

**Significantly different from zero at the .01 level, two-tailed test.

'The regression-adjusted mean expenditures and admission rates for MHSP nonusers are the means predicted by the regression model for nonusers if they had the same characteristics as MHSP users.

in Cincinnati was not statistically significant. As discussed previously, these estimates only pertain to costs incurred by the Medicare program and do not include beneficiary out-of-pocket costs.

The regression estimates imply that in 1989 the demonstration increased the average total Medicare cost by $500 for beneficiaries who used the MHSP clinics for ancillary services only, an increase of 14.5 percent (Table 111.17). The demonstration did not have a statistically significant effect on Part A costs, inpatient hospital costs, or hospital admissions among users of the MHSP clinics for ancillary services only. The estimated increase in the average total cost to Medicare was thus due primarily to an estimated increase in Part B costs (which include the costs of the MHSP ancillary services). The estimated percentage increase in average total Medicare costs for beneficiaries who used the MHSP for ancillary services only was 17.4 percent in Milwaukee, 16.2 percent in San Jose, and 14.2 percent in Baltimore. The estimated effect in Cincinnati was not statistically significant.

We estimated the effect of the demonstration on Medicare costs separately for beneficiaries who use MHSP physician services and those who use MHSP clinics for ancillary services only. The overall effect across all MHSP users is the weighted average of the estimated effects for the two classes of user, where the weights are the proportion of MHSP users in each class. In 1989, 61.0 percent of MHSP users used MHSP physician services and 39.0 percent used the clinics for ancillary services only. Applying these weights to the estimated impacts for the two classes of user, we find that the estimated effect of the demonstration across all MHSP users in 1989 was to increase Medicare program costs by an average of $463 per beneficiary.

The average cost to Medicare of the services provided under the demonstration in 1989 was $984 per beneficiary (see Table 111.1). Thus, in 1989 each dollar spent by the Medicare program on MHSP services resulted in a net increase in total Medicare program expenditures of approximately 47

TABLE III.17

REGRESSION-ADJUSTED DIFFERENCES BETWEEN USERS OF THE MHSP FOR ANCILLARY SERVICES ONLY AND MHSP NONUSERS IN MEAN MEDICARE EXPENDITURES AND HOSPITAL ADMISSION RATES, 1989

	Medicare Expenditures and Hospital Admission Rates in 1989			
	Mean Value for Users of the MHSP for Ancillary Services Only	Regression-Adjusted Mean for MHSP Nonusers'	Adjusted User-Nonuser Difference	Implied Percentage Effect of the MHSP
All Cities				
Total expenditures	$3,951	$3,451	+500 • *	+ 14.5
Part A expenditures	2,131	2,267	-136	-6.0
Part B expenditures	1,819	1,183	+636 **	+53.8
Inpatient hospital expenditures	1,967	2,043	-76	-3.7
Home health expenditures	82	86	-4	-4.7
SNF expenditures	41	87	-46 **	-52.9
Non-MHSP physician and medical supplier expenditures	990	890	+100 • *	+11.2
Hospital OPD/ER expenditures	360	293	+67 **	+22.9
Hospital admissions per 1,000 beneficiaries	338	332	+6	+ 1.8
Baltimore				
Total expenditures	4,277	3,744	+533 **	+ 14.2
Part A expenditures	2,371	2,522	-151	-6.0
Part B expenditures	1,905	1,221	+684 • *	+56.0
Inpatient hospital expenditures	2,196	2,294	-98	-4.3
Home health expenditures	102	104	-2	-1.9
SNF expenditures	37	76	-39 *	-51.3
Non-MHSP physician and medical supplier expenditures	1,044	929	+115 **	+ 12.4
Hospital OPD/ER expenditures	362	292	+70 **	+24.0
Hospital admissions per 1,000 beneficiaries	388	364	+24	+6.6
Cincinnati				
Total expenditures	3,256	3,444	-188	-5.5
Part A expenditures	1,933	2,237	-304	-13.6
Part B expenditures	1,323	1,208	+115	+9.5
Inpatient hospital expenditures	1,871	2,010	-139	-6.9
Home health expenditures	51	38	+13	+34.2
SNF expenditures	0	126	-126	-100.0
Non-MHSP physician and medical supplier expenditures	789	897	-108	-12.0
Hospital OPD/ER expenditures	241	311	-70	-22.5
Hospital admissions per 1,000 beneficiaries	355	362	-7	-1.9

TABLE III.17 (continued0

	Medicare Expenditures and Hospital Admission Rates in 1989			
	Mean Value for Users of the MHSP for Ancillary Services Only	Regression-Adjusted Mean for MHSP Nonusers[1]	Adjusted User-Nonuser Difference	Implied Percentage Effect of the MHSP
Milwaukee				
Total expenditures	3,255	2,772	+483 •	+ 17.4
Part A expenditures	1,661	1,760	-99	-5.6
Part B expenditures	1,594	1,012	+582 • *	+57.5
Inpatient hospital expenditures	1,485	1,544	-59	-3.8
Home health expenditures	41	35	+6	+17.1
SNF expenditures	56	79	-23	-29.1
Non-MHSP physician and medical supplier expenditures	771	694	+77 *	+11.1
Hospital OPD/ER expenditures	411	318	+93 **	+29.2
Hospital admissions per 1,000 beneficiaries	338	349	-11	-3.2
San Jose				
Total expenditures	3,862	3,323	+539 *	+ 16.2
Part A expenditures	1,940	2,079	-139	-6.7
Part B expenditures	1,920	1,242	+678 • *	+54.6
Inpatient hospital expenditures	1,802	1,852	-50	-2.7
Home health expenditures	71	99	-28	-23.3
SNF expenditures	45	117	-72 *	-61.5
Non-MHSP physician and medical supplier expenditures	1,112	989	+123 *	+ 12.4
Hospital OPD/ER expenditures	325	254	+71 *	+28.0
Hospital admissions per 1,000 beneficiaries	226	258	-32	-12.4

*Significantly different from zero at the .05 level. two-tailed test.

**Significantly different from zero at the .01 level, two-tailed test.

'The regression-adjusted mean expenditures and admission rates for MHSP nonusers are the means predicted by the regression model for nonusers if they had the same characteristics as MHSP users.

cents.[29] In 1989 the total cost to Medicare of all services provided under the demonstration was $30.052 million.[30] Our estimates thus indicate that in 1989 the MHSP Demonstration resulted in a net increase in Medicare program expenditures of $14.124 million. The projected net effect for 1993 is presented below in Chapter V, where we project Medicare MHSP costs for 1993.

F. ACCESS TO CARE FOR MHSP USERS AND NONUSERS

Access to care may be defined as the ability of individuals to enter the health care system for preventive or therapeutic care. Access to care is influenced by the availability of providers and by the ability of individuals to pay for care. The MHSP clinics provide care to Medicare beneficiaries free of charge, so the demonstration is expected to either increase or maintain access to ambulatory care among beneficiaries in the MHSP service areas. An important question to ask is whether MHSP users would have had adequate access to care in the absence of the demonstration. Would they have obtained adequate office-based care from other providers in the community? Or would they have relied heavily on hospital emergency rooms and outpatient departments for their primary care? Would they have had adequate access to dental care and other services covered under the demonstration but not covered under the regular Medicare program?

These questions cannot be answered definitively without a true experimental design. To investigate whether the MHSP Demonstration appears to have increased access to physician services for beneficiaries who use MHSP clinics, we used the detailed Part B claims data we obtained for Baltimore and Milwaukee to compare the physician visit rates for MHSP users and nonusers.[31] We conducted two sets of comparisons:

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[29]This is derived by dividing the net increase in Medicare costs per beneficiary ($463) by the average cost per beneficiary of the MHSP services provided ($984).

[30]This figure was obtained from MHSP costs reports for 1989.

[31]The use of physician services has been widely used in previous studies to measure access to care (for example, see Freeman et al., 1987).

- A comparison of physician visit rates in 1989, by setting, for (1) users of MHSP physician services in 1989 and (2) MHSP nonusers who had positive Medicare payments in 1989
- A pre/post comparison of physician visit rates, by setting, for (1) users of MHSP physician services who began using the MHSP in 1989 and (2) MHSP nonusers who had positive Medicare payments in 1989.

The advantage of the latter comparison is that it provides information on the physician services received by MHSP users before they began using the MHSP. We were not able to compare access to dental care and other services covered under the demonstration but not covered under the regular Medicare program, because we had no data on the use of such services by MHSP nonusers.

In interpreting the data on use of physician services, it is important to keep in mind a fundamental difference between the way physician visits are measured for MHSP users and nonusers. For MHSP nonusers, the only visits in the claims data are visits that were covered by Medicare. Thus, for example, visits to physicians for routine physical exams are not included in the visit counts for MHSP nonusers. MHSP users, on the other hand, have visits to both MHSP and non-MHSP physicians, and their visits to MHSP physicians undoubtedly include some visits for routine physical exams. Thus, the visit counts for MHSP users include visits for routine physical exams, while the visit counts for MHSP nonusers do not. We do not have any way of determining the number of physician visits by MHSP nonusers for routine physical exams, and for MHSP users we cannot distinguish visits for routine physical exams from other visits.

Table III.18 presents physician visit rates in 1989 for users of MHSP physician services in Baltimore and Milwaukee and regression-adjusted visit rates for MHSP nonusers who had positive Medicare payments in 1989. The latter were obtained from regression models estimated on MHSP users and nonusers that included the same control variables as identified in the previous section. The regression-adjusted visit rates for MHSP nonusers are the visit rates predicted for nonusers if they had the same characteristics as users. In both Baltimore and Milwaukee, MHSP users had a higher average number of physician visits in 1989 than MHSP nonusers, after controlling for observable

TABLE 111.18

REGRESSION-ADJUSTED COMPARISONS OF PHYSICIAN VISIT RATES FOR USERS OF MHSP PHYSICIAN SERVICES AND MHSP NONUSERS, 1989

	Number of Physician Visits in 1989		
	Mean for Users of MHSP Physician Services	Regression-Adjusted Mean for MHSP Nonusers'	Adjusted User-Nonuser Difference
Baltimore			
Total visits	9.67	7.39	2.28 **
MHSP	5.26	0.00	5.26 **
Non-MHSP	4.41	7.39	-2.98 **
Office visits	7.09	3.78	3.31 **
MHSP	5.26	0.00	5.26 **
Non-MHSP	1.83	3.78	-1.95 **
Inpatient hospital visits	1.90	2.52	-0.62 **
Home visits	0.03	0.09	-0.06 **
Hospital ER/OPD visits	0.41	0.45	-0.04 *
Milwaukee			
Total visits	10.14	8.80	1.34 **
MHSP	4.82	0.00	4.82 **
Non-MHSP	5.32	8.80	-3.48 **
Office visits	7.10	4.52	2.58 **
MHSP	4.82	0.00	4.82 **
Non-MHSP	2.28	4.52	-2.24 **
Inpatient hospital visits	2.18	3.02	-0.84 **
Home visits	0.01	0.04	-0.03 **
Hospital ER/OPD visits	0.57	0.57	-0.00

NOTE: Data on visits to MHSP physicians are from the MHSP claims and data on visits to non-MHSP physicians are from the detailed Medicare Part B claims we obtained for Baltimore and Milwaukee.

*Significantly different from zero at the .05 level, two-tailed test.

**Significantly different from zero at the .01 level, two-tailed test.

'The regression-adjusted mean number of physician visits for MHSP nonusers is the mean value predicted by the regression model for nonusers if they had the same characteristics as MHSP users.

differences between the two groups. The higher visit rates for MHSP users were due to a higher rate of office visits. In Baltimore, the average number of office visits for MHSP users in 1989 was 7.09, while the regression-adjusted value for nonusers was 3.78. The user-nonuser difference in the rate of office visits was also large in Milwaukee, although not as large as the difference in Baltimore (7.10 office visits for MHSP users versus 4.52 visits for nonusers). From the claims data, we cannot determine whether these higher visit rates for MHSP users represent a desirable improvement in access to care, or whether they represent unnecessary utilization. It is also useful to note that in both Baltimore and Milwaukee, MHSP nonusers are receiving the majority of their care in physicians' offices rather than in hospital ERs/OPDs.

Table III.19 presents comparisons of physician visit rates in 1988 and 1989 for (1) MHSP users of physician services who began using the MHSP in 1989 and (2) MHSP nonusers who had positive Medicare payments in 1989. By focusing on new users of the MHSP in 1989, we were able to conduct pre/post comparisons to see how visit rates for MHSP users changed from the year before they began using the MHSP (1988) to their first year of MHSP use (1989). These estimates have not been adjusted to control for differences between users and nonusers, because our objective in this analysis was to provide descriptive data on how visit rates for the two groups changed between 1988 and 1989. Due to sample size considerations, this analysis was conducted only for Baltimore.[32]

Beneficiaries in Baltimore who began using MHSP physician services in 1989 had an average of 3.72 office visits the previous year, which was nearly identical to the corresponding average for the comparison group (3.81). In 1989, however, new users of MHSP physician services had a significantly higher average number of office visits than the comparison group (5.86 versus 3.49). The average number of office visits to non-MHSP physicians for beneficiaries who began using MHSP physician services in 1989 declined only modestly from 1988 to 1989 relative to the experience of the comparison group. Thus, new users of MHSP physician services in 1989--who had an average of 2.81

[32]Our sample of MHSP users contains 539 beneficiaries in Baltimore who began using MHSP physician services in 1989 but only 177 such beneficiaries in Milwaukee.

TABLE III.1 9

UNADJUSTED PRE/POST COMPARISONS OF PHYSICIAN VISIT RATES FOR NEW USERS OF MHSP PHYSICIAN SERVICES IN 1989 AND MHSP NONUSERS WITH POSITIVE MEDICARE PAYMENTS IN 1989 (BALTIMORE)

	Users of MHSP Physician Services who Began Using the MHSP in 1989	MHSP Nonusers Who Had Positive Medicare Payments in 1989	User-Nonuser Ratio
Mean number of physician visits			
1989	8.53	8.89	0.96
1988	6.40	8.95	0.72 **
Mean number of non-MHSP physician visits			
1989	5.72	8.89	0.64 **
1988	6.40	8.95	0.72 **
Mean number of office visits			
1989	5.86	3.49	1.68 **
1988	3.72	3.81	0.98
Mean number of non-MHSP office visits			
1989	3.05	3.49	0.87 *
1988	3.72	3.81	0.98
Mean number of inpatient hospital visits			
1989	1.87	3.73	0.50 **
1988	1.76	3.41	0.52 **
Mean number of hospital ER/OPD visits			
1989	0.48	0.58	0.83
1988	0.36	0.57	0.63 **
Mean number of home visits			
1989	0.04	0.08	0.50 *
1988	0.05	0.11	0.45 *
Percent with an office visit			
1989	100.0	67.3	1.49 **
1988	64.6	66.3	0.97
Percent with a non-MHSP office visit			
1989	61.0	67.3	0.91 **
1988	64.6	66.3	0.97

TABLE III.19 (continued)

	Users of MHSP Physician Services who Began Using the MHSP in 1989	MHSP Nonusers Who Had Positive Medicare Payments in 1989	User-Nonuser Ratio
Percent with an inpatient hospital visit			
1989	15.6	23.3	0.67 **
1988	13.5	20.7	0.65 **
Percent with a hospital ER/OPD visit			
1989	25.8	29.1	0.89
1988	20.4	26.5	0.77 **
Percent with a home visit			
1989	1.9	2.8	0.68
1988	1.9	3.0	0.63
Sample Size	539	18,115	

*Difference between users and nonusers significantly different from zero at the .05 level.

**Difference between users and nonusers significantly different from zero at the .01 level.

visits to MHSP physicians--continued to have office visits to non-MHSP physicians in 1989 at approximately the same rate as they had in the previous year.

One of the original objectives of the MHSP was to shift the site of primary care from hospital ERs/OPDs to MHSP clinics. It is useful to note that beneficiaries who began using MHSP physician services in 1989 had not been obtaining significant amounts of care from hospital ERs/OPDs in the previous year. In fact, their visits to physicians at hospital ERs/OPDs increased from 1988 to 1989 relative to the comparison group. Thus, for this group of new MHSP users, the MHSP did not appear to be a substitute for care received at hospital ERs/OPDs.

G. OUT-OF-POCKET COSTS OF MHSP USERS

By offering physician services and a range of other services to Medicare beneficiaries free of charge, the MHSP Demonstration has clearly reduced the out-of-pocket costs for beneficiaries who use the clinics. We cannot estimate the full magnitude of the reduction in out-of-pocket costs, however. Pharmacy services and dental services account for nearly two-thirds of the total cost to Medicare of the services provided under the demonstration. These services are not covered under the regular Medicare program, however, so we have no data on the out-of-pocket costs incurred for these services by the comparison group of MHSP nonusers. We thus have no basis to reliably estimate the out-of-pocket costs that MHSP users would have incurred for such ancillary services as prescription drugs and dental care in the absence of the demonstration. The amount spent by Medicare for such services under the demonstration does not provide a reliable estimate of the out-of-pocket costs that MHSP users would have incurred for these services absent the demonstration, for two reasons. First, because these services are offered free of charge under the demonstration, we would expect that MHSP patients are using them at a higher rate than would have been the case had beneficiaries faced market prices. In addition, the prices beneficiaries would have faced for these services outside the demonstration may differ from the prices Medicare is paying under the demonstration's cost-based reimbursement system.

Although we cannot reliably estimate the effects of the MHSP Demonstration on beneficiaries' total out-of-pocket costs for all health care services, we have used the Medicare claims data to estimate the effects of the demonstration on beneficiaries' out-of-pocket liability for services covered under the regular Medicare program. The out-of-pocket liability represents the deductible and coinsurance amounts beneficiaries face for standard Part A and Part B Medicare services. Many beneficiaries have Medicare supplemental insurance that covers much of their out-of-pocket liability. Unfortunately, our data sources do not identify the individuals in our sample who have supplemental insurance. Our estimates of the out-of-pocket liability will thus overstate the actual out-of-pocket costs incurred for Medicare services by sample members who have supplemental insurance. On the other hand, we do not have any data on the premiums for supplemental insurance policies held by sample members, which are also a component of out-of-pocket costs.

To estimate the out-of-pocket liability for each individual in our sample for 1989, we applied the Medicare benefit rules for Part A and Part B services to our sample. For each sample member, we computed the following components of out-of-pocket liability: (1) inpatient hospital deductible, (2) inpatient hospital coinsurance, (3) SNF coinsurance, (4) Part B deductible, and (5) Part B coinsurance_ We used data from the MADRS file as well as the detailed Part B claims for Baltimore and Milwaukee. The latter were used to estimate the costs incurred by beneficiaries who did not meet the Part B deductible in 1989.[33] We included these costs in the Part B deductible component of out-of-pocket liability specified above, since these costs would have been applied toward the deductible_ Because our estimates used the Part B claims for Baltimore and Milwaukee, our analysis is limited to those two cities.

A limitation of our analysis is that we were not able to estimate beneficiaries' out-of-pocket liability for "balance bills"--that is, amounts charged in excess of the Medicare approved charge by

[33]Part B cost data are available on the MADRS file only for beneficiaries who exceeded the deductible and had positive Medicare payments.

physicians who did not accept assignment on the claim.[34] In 1988, the mean balance billing liability for Medicare beneficiaries nationally was $71 (Physician Payment Review Commission 1989). The mean balance billing liability for low income beneficiaries is probably below the overall mean for all beneficiaries, because low income beneficiaries are more likely to receive care on an assigned basis (Nelson et al. 1989). In addition, the contribution of balance billing to beneficiaries' total out-of-pocket costs has decreased with the implementation of the Medicare physician payment reform legislation, which restricts the amount by which physicians can balance bill patients.

In 1989, the average out-of-pocket liability for Medicare services among MHSP users in Baltimore was $554, while the corresponding value in Milwaukee was $479 (Table 111.20). In each city, over two-thirds of the total out-of-pocket liability for MHSP users was for Part B services. The MHSP Demonstration is expected to reduce beneficiaries out-of-pocket liability for MHSP users in two ways. First, the physician services offered free of charge under the demonstration are a substitute for non-MHSP physician services, for which beneficiaries face out-of-pocket liabilities. In addition, the physician services and ancillary services offered under the demonstration may improve beneficiaries' health status and thus reduce their use of standard Medicare services.

To estimate the effects of the demonstration on beneficiaries' out-of-pocket liabilities for standard Part A and Part B Medicare services, we estimated regression models on MHSP users and nonusers. We estimated the effects of the demonstration on out-of-pocket liabilities separately for users of MHSP physicians services and beneficiaries who used MHSP clinics for ancillary services only. The control variables in our models were the same as those used above in our analysis of the effects of the demonstration on costs to the Medicare program. Our regression estimates indicate that in 1989 the demonstration reduced the total Medicare out-of-pocket liability for users of MHSP physician services by $226 (or 30.3 percent) in Baltimore and by $139 (or 22.8 percent) in Milwaukee

[34] The Part B claims data for Baltimore did not include an indicator of whether assignment was accepted on the claim. Such an indicator was included in the data for Milwaukee, but it was not included in our analysis file, because a detailed analysis of out-of-pocket liability for Part B services was not included in our research design for this evaluation.

TABLE III.20

MEAN OUT-OF-POCKET LIABILITY FOR STANDARD MEDICARE SERVICES BY MHSP USERS, 1989

	All MHSP Users in 1989	Users of MHSP Physician Services in 1989	Users of the MHSP in 1989 for Ancillary Services Onlv
Baltimore			
All services	$554	$520	$611
Part A services	175	164	194
Inpatient deductible	118	117	120
Inpatient coinsurance	50	42	64
SNF coinsurance	7	5	10
Part B services	379	356	417
Deductible	61	58	65
Coinsurance	318	298	352
Milwaukee			
All services	479	471	489
Part A services	132	137	128
Inpatient deductible	109	118	101
Inpatient coinsurance	7	6	8
SNF coinsurance	16	13	19
Part B services	347	334	361
Deductible	63	61	65
Coinsurance	284	273	296

NOTE: Out-of-pocket liability for Part B services does not include balance billed amounts on claims on which the physician did not accept assignment, as this was not available in our data. The out-of-pocket liability shown for the Part B deductible also includes Medicare allowed charges incurred by individuals who did not meet the deductible.

(Table 111.21). These reductions were due to reductions in out-of-pocket liability for Part B services, inpatient hospital services, and SNF services. Our estimates imply that the demonstration has not had a statistically significant effect on the Medicare out-of-pocket liability for beneficiaries who use the MHSP clinics for ancillary services only.

In interpreting these findings, it important to emphasize that our analysis focused only on the effects of the demonstration on out-of-pocket liabilities for services covered under Medicare. This does not capture the full effects of the demonstration on beneficiaries' out-of-pocket costs for all health care services.

TABLE III.21

REGRESSION-ADJUSTED DIFFERENCES BETWEEN MHSP USERS AND NONUSERS IN MEAN OUT-OF-POCKET LIABILITY FOR STANDARD MEDICARE SERVICES, 1989

	Mean Out-of-Pocket Liability for MHSP Users	Regression-Adjusted Mean for MHSP Nonusers	Adjusted User-Nonuser Difference	Implied Percentage Effect of the MHSP
Users of MHSP Physician Services				
Baltimore				
All services	$520	$746	**-226 ****	-30.3
Inpatient services	159	271	**-112 ***	-41.3
SNF services	5	28	**-23 ****	-82.1
Part B services	356	447	**-91 ****	-20.4
Milwaukee				
All services	471	610	-139 **	-22.8
Inpatient services	124	170	**-46 ***	-27.1
SNF services	13	40	**-27 ***	-67.5
Part B services	334	400	**-66 ****	-16.5
Users of the MHSP for Ancillary Services Only				
Baltimore				
All services	611	**654**	-43	**-6.6**
Inpatient services	184	**260**	-76	**-29.2**
SNF services	10	**30**	-20 **	**-66.7**
Part B services	417	**364**	**+53 ****	**+ 14.6**
Milwaukee				
All services	489	473	**+16**	**i-3.4**
Inpatient services	109	89	-20	**-22.5**
SNF services	19	29	-10	**-34.5**
Part B services	361	315	**+46 ****	**+ 14.6**

IV. QUALITY OF CARE ANALYSIS

In this chapter, we evaluate the quality of care provided by MHSP clinics. Our approach was to review the process of care at the clinics to determine whether it meets established clinical standards. The analysis was based on a review of the medical records of a sample of MHSP patients in each city. To provide a context for interpreting our findings, we compared them with the findings from a similar review of the process of ambulatory care provided to a national sample of Medicare beneficiaries enrolled in HMOs.[1]

A. METHODOLOGY

1. Selection of MHSP Patients for Review

The sample of MHSP patients for the medical record review was selected from MHSP users who had one or more clinic visits for routine care during 1989. The sample included 907 MHSP patients--126 from Cincinnati, 123 from Milwaukee, 224 from San Jose, and 434 from Baltimore. The sample was selected from the two clinics in Milwaukee and the two clinics with the highest Medicare patient volume in both Cincinnati and San Jose. In Baltimore, which has five MHSP clinics, the sample was selected from the three highest-volume clinics. Within each city, the sample was allocated across clinics in proportion to the number of Medicare patients who had visits in 1989 for routine care. In analyses that combine observations across cities, observations have been weighted to account for the differential sampling rates.

2. Primary Data Collection

Clinics were requested to photocopy the medical record of each sampled beneficiary and mail the photocopy to the research team at SysteMetrics. In some instances, however, clinics were unable

[1] We also used the medical records as a source of additional descriptive data on the use of prescription drugs, laboratory services, and radiology services by MHSP patients. These data are presented in Appendix C.

to locate a record for the sampled patient. In other instances, the patient's record did not reflect any primary care during the study period; in most of these cases, the medical record reflected care provided only by podiatrists, ophthalmologists, otolaryngologists, or dentists. We excluded beneficiaries in our original sample who did not have any primary care in 1989 because the review criteria we developed for this evaluation focused on primary care. We replaced such beneficiaries with replacement sample members who were selected according to the same criteria specified above. Medical records for 229 replacement cases were obtained from the MHSP clinics.

The original sample was selected from MHSP patients with at least one routine visit in 1989 recorded on MHSP claims. The finding that the medical records of some sample members included only visits to podiatrists or dentists reflects a discrepancy between the medical records and the claims, because separate codes are to be used on the claims to indicate podiatry and dental care. This was due to billing errors, which are being corrected. The finding that some sample members had visits only to ophthalmologists or otolaryngologists does not necessarily indicate a discrepancy between the medical records and the claims, however, because such visits can only be coded on the MHSP claims as routine visits (even though they are not primary care visits).

Once medical records were received, registered record administrators abstracted the following data items from them:

- Clinical conditions present
- Outpatient procedures performed
- Number of laboratory studies performed including complete blood count (CBC), electrolytes, glucose level, drug serum level, coagulation studies, liver function tests, renal function tests, other renal function tests, urinalysis, and lipid panel
- Number of radiology studies
- Number of physician encounters

Physician encounters were defined as a visit with a physician or physician extender (nurse practitioner or physician assistant). Next, registered nurses (RNs), using both criteria and their clinical judgment, reviewed each record to identify any potential quality of care problems.[2] Any case suspected of having a significant quality of care problem with the potential for an adverse effect on the patient was referred for physician peer review. The physician either confirmed the problem and assigned a severity level to it or determined that the potential problem did not represent a significant quality of care problem. Physician review included issues noted by the nurse reviewers as well as any other quality of care issues the physicians may have noted. Completed abstract forms were edited by SysteMetrics staff and entered into a computerized database.

3. **Review Criteria**

We focused on the overall quality of care delivered by MHSP clinics, in addition to potential problems resulting from over- or under-utilization of MHSP services. Because coverage for drugs is one of the major benefits offered under the MHSP, we concluded that a review of drug prescribing and monitoring activity would yield important information on the quality of MHSP clinic care. The criteria developed for review of drug prescribing and monitoring activity included:

- Appropriateness of indications for prescribing the drug based on the patient's disease state, severity of illness, allergies, and possible drug interactions for those patients receiving multiple medications
- Appropriateness of dosage and dosage interval
- Monitoring for therapeutic serum levels or toxicity
- Monitoring for side effects
- Appropriateness of physician intervention in response to adverse drug reactions
- Appropriateness of the refill interval based on the dosage and dosage interval ordered by the physician

[2]Results of the nurse reviews were entered on the medical record abstract forms, which also contained the data previously abstracted by the record administrators.

Criteria were also developed to assess the general aspects of medical care provided to the patient and included the appropriateness of:

- Baseline data such as annual history, physical examination, current drug record, and documentation of allergy status
- Consultations, diagnostic, and therapeutic ancillary services
- Patient education
- Care for four chronic conditions, which included:

  - ***Hypertension.*** Blood pressure, weight recorded, and appropriate periodic screening scheduled;
  - ***Diabetes.*** Appropriate testing including monitoring of glucose levels, complications monitored and managed appropriately and appropriate periodic screening scheduled;
  - ***Ischemic coronary artery disease (CAD).*** Heart rate, rhythm, and angina1 symptoms controlled; cardiac compensation documented; and appropriate periodic screening scheduled; and
  - ***Chronic Pulmonary Disease.*** Appropriate monitoring including pulmonary functions tests, appropriate therapy, appropriate medications and other therapeutic options and appropriate periodic screening scheduled.

In addition to criteria-based review, problems were identified and confirmed using the clinical knowledge and judgment of the reviewers.

A limitation of the analysis is that it focuses only on the care beneficiaries received at the MHSP clinics. We have not reviewed the care MHSP patients received from other providers, so we cannot assess the overall quality of care received by these beneficiaries.

4. Medical Record Review Methodology

The process of care was evaluated using data abstracted from the medical records of sampled MHSP cases. Data were abstracted on diagnoses, procedures, laboratory and radiology tests, and the number of physician encounters,-which also included encounters with physician extenders. Next, using

both a set of criteria and clinical judgment, RNs reviewed the records to identify potential quality of care problems. Cases with potential quality of care problems were referred to primary care physicians for a final review and an assessment of quality that was based on clinical judgment. Physician reviewers classified the severity of each problem and assigned it to a category between one and three. Severity one represented medical mismanagement without the potential for significant effects, and severity two reflected medical mismanagement problems with the potential for significant effects. Severity three exemplified medical mismanagement ***with significant adverse effects on the patient.*** Severity one and two problems were further classified as minor problems, while severity three problems were considered major problems. If more than one problem was identified for a case, the case was classified according to the highest severity problem. Examples of severity one and two problems identified in the study are shown in Table IV.l. No severity three problems were noted for the reviewed cases.

Problems were also classified as drug-specific, disease-related, or treatment-associated. Drug-specific problems included problems associated with medications or drug allergies, including inappropriately prescribed medications and inappropriate monitoring of prescribed medications. Problems classified as disease-related included problems in the treatment of the specific diseases for which we had criteria [hypertension, diabetes, ischemic coronary artery disease (CAD), and chronic pulmonary disease (CPD)], in addition to other miscellaneous conditions. Finally, problems classified as treatment-related represented problems with the appropriateness of the baseline data (e.g., the physical examination, current drug record, and documentation of allergies); appropriateness of consultative, diagnostic, and therapeutic services; and patient teaching.[3]

[3]An "other" category was also used which denoted problems with laboratory and radiology tests and the number of physicians seen. However, there were no problems in this category.

TABLEIV.1

EXAMPLES OF CONFIRMED QUALITY OF CARE
PROBLEMS BY SEVERITY LEVEL

SEVERITY 1

- No current drug record available for 1989. From progress notes, it appears patient only on multivitamins.
- Results of clotting studies ordered on 5/10/89, but not available in chart when review was conducted.
- Allergy to sulfur recorded, but patient given Bactrim during 7/89 (without apparent harm). Documentation error in recording allergy.

SEVERITY 2

- No documentation during year of routine health screening, PAP smear, mammogram, or test for occult blood in 72 year-old female.
- Patient with borderline diabetes mellitus should have had blood sugar monitored in 1989 and no documentation of such.
- Patient given six refills of Percocet #60 for back pain, but (there was) no physician note documenting back problems. Patient also given Xanax and Trazodone without sufficient documentation. Strong possibility of addiction exists.
- No documentation of patient education regarding interaction potential of multiple medications.

NOTE: No Severity 3 problems were identified for any site.

5. Medicare HMO Comparison Group

To provide a basis for interpreting the findings for the MHSP clinics, we compared them with the findings from a similar medical record review of a comparison sample of Medicare HMO enrollees. We selected a national sample of 300 Medicare HMO enrollees whose medical records had been reviewed for quality of care by a peer review organization (PRO) and by SysteMetrics' SuperPRO staff. The cases in the comparison group were selected from 47 HMOs in 22 states.[4] To help achieve comparability with the MHSP sample, the HMO sample was restricted to enrollees with at least one physician office visit or home visit during the year for which their care was reviewed. The same criteria, with the exception of the review of drug prescribing and monitoring behavior, were used for the review of the HMO enrollees as were used in the evaluation for the MHSP patients. In the comparisons of problem rates for HMO enrollees and MHSP patients, we therefore computed an adjusted problem rate for MHSP patients that excluded any drug-related problems. This adjustment was necessary because drug data were not available for the HMO comparison group.

Using the final quality of care problem reports from SuperPRO and the PRO data for quality problems for the HMO cases, we identified confirmed quality of care problem cases. These cases represented problem cases identified by both SuperPRO and the PRO as well as those identified individually by SuperPRO but not the PRO. In most instances, we were able to identify the highest severity level assigned to a case.

While diagnostic narratives were available for these cases, the data were not coded because of budgetary constraints. Furthermore, the clinical data from the MHSP user group were coded using only a three-digit code. These two limitations precluded case-mix adjustments for these samples.

We did not collect medical record data from non-MHSP providers in the MHSP service areas because this would have been very costly, and we were concerned that a large proportion of non-

[4]The states from which the HMO sample was selected include Arizona, California, Florida, Georgia, Iowa, Illinois, Kansas, Maine, Michigan, Missouri, Minnesota, Nebraska, New Jersey, New Mexico, Nevada, Ohio, Oklahoma, Pennsylvania, Rhode Island, Texas, Washington, and Wisconsin.

MHSP providers in the MHSP cities would have refused to release their medical records for review. The Medicare HMO sample allowed us to compare the quality of care received by MHSP patients with that received by another segment of the Medicare population. However, we cannot compare the quality of care provided by MHSP clinics with that provided by other community providers which MHSP patients may have used in the absence of the demonstration.

6. Assessment of Continuity of Care

Continuity of care may be defined as "the extent to which medical services are received as a coordinated and uninterrupted succession of events consistent with the medical care needs of patients" (Shortell 1976). An assessment of the continuity of care provided to MHSP patients was included in the medical record review of the overall process of care provided to patients. We also investigated the feasibility of measuring continuity of care through an analysis of claims data, by comparing the number of different physicians seen by MHSP users and nonusers. This type of analysis has been recommended in the literature and is based on the presumption that obtaining care from many different physicians may be lead to poor continuity of care (Erikkson and Mattson 1983).

We were unable to compare MHSP users and nonusers with respect to the number of different physicians seen in 1989 because of data limitations. The MHSP claims do not identify the physician who provided the service, so we cannot determine from the claims whether patients see the same physician on successive visits to the clinic or whether they see different physicians. We investigated the number of different MHSP physicians seen by sample members in the medical record review, and these results are presented below, but we do not have corresponding data for nonusers who obtained care from non-MHSP clinics or group practices. The latter problem reflects limitations of the physician ID numbers on Part B claims, which do not enable us to uniquely identify physicians? In general, physicians are identified on Part B claims by billing numbers. These do not permit the

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'This limitation of the physician ID system on Part B claims prompted HCFA to develop the Unique Provider Identification Number (UPIN) system, which is designed to uniquely identify physicians on claims. This system was not implemented until after the end of our analysis period.

unique identification of individual physicians, because (1) some physicians have multiple billing locations, and thus multiple ID numbers, and (2) physicians in clinics or group practices often bill under the same number. Given these limitations, the claims data did 'not support a meaningful analysis of continuity of care.

B. RESULTS OF THE PROCESS OF CARE ANALYSIS

In this section, we present the results of our analysis of the process of care provided to MHSP patients, and we compare those findings to review results for the HMO comparison group. In analyses which combined observations across all four cities, observations were weighted to adjust for the different sampling rates across cities. The effect of the weighting is to ensure that the weighted distribution of sample members across cities corresponds with the distribution of the population of MHSP users across cities. In the city-specific analyses, no weighting was necessary.

1. Overall MHSP Problem Rates

Of the 907 reviewed MHSP cases, 37.4 percent were confirmed as having a quality of care problem (Table IV.2). In some cases, more than one quality of care problem was identified. The average number of problems per problem case was 1.6. Among cases with at least one confirmed problem, 91.9 percent had at least one severity level two problem, while 8.1 percent were classified as having only severity level one problems. The low frequency of severity level one problems was a result of the practice by the reviewers of not referring to physician review potential quality of care problems that only involved documentation errors or minor, inconsequential problems. The lack of any level three problems indicates that while cases with medical mismanagement were identified, there were no observable, significant adverse effects on patients.

The problem rates ranged from 27.7 percent in San Jose to 50.0 percent in Cincinnati. The average number of problems per problem case was similar across cities, ranging from 1.5 in San Jose to 1.9 in Cincinnati and Milwaukee. The percentage of the problem cases assigned severity level two

TABLE IV.2

PROBLEM CASES AND RATES
OVERALL AND BY CITY (1989)

	Overall	Baltimore	Cincinnati	Milwaukee	San Jose
Number of Reviewed Cases	907	434	126	123	224
Number of Problem Cases	339	164	63	59	62
Number of Problems Identified'	556	257	117	115	96
Problem Rate (%)[2]	37.4	37.8	50.0	48.0	27.7
Average Number of Problems Per Problem Case	1.6	1.6	1.9	1.9	1.5
Percent Distribution of Problem Cases By Severity Level					
Level 1	8.1	5.8	1.7	13.8	12.5
Level 2	91.9	94.2	98.3	86.2	87.5
Level 3	0.0	0.0	0.0	0.0	0.0

NOTE: Overall results are weighted.

'Problem cases may include more than one problem.

[2]The problem rate is calculated as the number of cases with a problem divided by the number of reviewed cases.

ranged from 86.2 percent in Milwaukee to 98.3 percent in Cincinnati. As noted previously, no severity level three problems were found in any city.

2. Quality of Care Problems By Type

Over 59 percent of the quality of care problems found for the MHSP sample were related to initial or continuing treatment, 24.1 percent were drug-related problems, and 16.0 percent were disease-specific (Table IV.3). Treatment-related problems were the most common type of problem found in each of the four cities.

Problems related to treatment included inadequate collection of baseline data, such as the lack of a medical history and physical for the year under study, the absence of a current drug record, or inadequate documentation of allergies. As shown in Table IV.3, 46 percent of the treatment-related problems were reflected by this category. Fourteen percent of the treatment-related problems were associated with diagnostic or therapeutic ancillary services--such as lab and radiology and services--that were not ordered appropriately, abnormal results that were not followed up, or results that were not documented. About three percent of the treatment-related problems reflected patient teaching that was not conducted appropriately, and an additional two percent reflected consultations that were not ordered appropriately. The remaining 34 percent of treatment-related problems were categorized as "other."

Of the disease-specific problems, the greatest number were for the treatment of hypertension (46.3 percent). Approximately, 20.6 percent were for the treatment of diabetes, 9.2 percent for chronic pulmonary disease, 3.3 percent were for ischemic coronary artery disease, and 20.6 percent for the treatment of other miscellaneous conditions.

We further analyzed disease-specific problems by type overall and within disease category. Overall, 45.0 percent of the problems were attributed to appropriate periodic screening that was needed but not scheduled (e.g., a patient with arteriosclerosis who did not have a fundoscopic examination within the year). Twenty-five percent of the problems were associated with appropriate

TABLE IV.3

DISTRIBUTION OF PROBLEM TYPES
OVERALL AND BY MHSP SITE (1989)

	Overall'		Baltimore		Cincinnati		Milwaukee		San Jose	
	Percent	N	Percent	N	Percent	N	Percent	N	Percent	N
Distribution of Problems										
Drug-Related (Monitored and Unmonitored)	24.1	134	25.7	66	26.5	31	15.7	18	27.0	26
Disease-Specific	16.0	89	17.5	4.5	11.1	13	7.0	8	24.0	23
Treatment	59.2	329	56.0	144	62.4	73	77.4	89	47.9	46
Undefined	0.6	4	0.8	2	--	--	--	--	1.0	1
Total		556		257		117		11.5		96
Treatment-Related										
Baseline Data	46.2	152	43.8	63	31.5	23	62.9	56	37.0	17
Consultations	2.1	7	2.1	3	2.7	2	1.1	1	4.4	2
Ancillary Services	14.0	46	18.1	26	26.0	19	4.5	4	4.4	2
Patient Teaching	3.2	10	3.5	5	0	0	3.4	3	4.4	2
Other	34.5	114	32.6	47	39.7	29	28.1	25	50.0	23
Total		329		144		73		89		46
Disease-Specific										
Hypertension	46.3	41	46.7	21	38.5	5	50.0	4	47.8	11
Diabetes	20.6	19	15.6	7	38.5	5	37.5	3	17.4	4
Ischemic CAD	3.3	3	2.2	1	0.0	0	12.5	1	4.4	1
Chronic Pulmonary Disease	9.2	8	13.3	6	7.7	1	0.0	0	4.4	1
Other Miscellaneous Disease	20.6	18	22.2	10	15.4	2	0.0	0	26.1	6
Total	--	89	100	45	--	13	--	8	--	23
Drug-Related Monitored (Only)										
Cardiac	59.1	71	60.7	37	54.8	17	35.3	6	77.8	14
Arthritis	10.6	13	9.8	6	19.4	6	17.6	3	0.0	0
Central Nervous System	6.4	8	6.6	4	12.9	4	5.9	1	5.6	1
Pulmonary	17.8	21	18.0	11	3.2	1	35.3	6	5.6	1
Vitamins	2.1	3	1.6	1	3.2	1	5.9	1	0.0	0
Anti-diabetics	0.7	1	0.0	0	0.0	0	0.0	0	5.6	1
Other Monitored	3.2	4	3.3	2	6.4	2	0.0	0	5.6	1
Total	--	120	100	61	--	31	--	17	--	18

NOTE: This table shows the number and percent distribution of all problems found in the reviewed cases by major type of problem. The denominator for the percentages is thus the total number of problems found in the review, not the number of cases with a problem.

'Overall results are weighted.

treatment that was not ordered (e.g., a patient with diabetes mellitus whose blood sugar was in poor control and who was not given intensive dietary therapy and was not considered for insulin therapy). Appropriate monitoring that was not carried out (e.g., a patient with chronic obstructive pulmonary disease, congestive heart failure, and pitting edema of legs was not scheduled for follow-up for two months, which was too long an interval) accounted for 9.2 percent of the problems. Appropriate testing that was not carried out (e.g., a patient with borderline diabetes without blood sugar monitoring during the year) represented 6.8 percent of problems. Lack of a recorded blood pressure accounted for 3.3 percent of the problems and the lack of a recorded weight reflected less than one percent of the problems. The remainder of the problems were categorized as unspecified.

On a disease-specific basis and within the hypertension group, two-thirds (66.2 percent) of the problems were associated with appropriate and periodic screening that was needed and not provided, and one-fourth (25.7 percent) of the problems were represented by appropriate treatment that was not ordered. About seven percent of the problems were related to blood pressure that was not recorded, and one percent of the problems were associated with weight that was not recorded.

Within the diabetes group, almost one-third (32.8 percent) of the problems were associated with appropriate testing that was not carried out, another third (30.1 percent) was attributed to appropriate treatment that was not ordered, and about one-fourth (27.3 percent) was related to appropriate periodic screening that was needed but not scheduled. The remainder of the problems were evenly split between complications that were improperly managed and problems that were categorized as unspecified.

There were only three problems in the ischemic CAD group, two of which were attributed to appropriate screening that was necessary but not scheduled and another in which appropriate treatment was not ordered. The number of problems associated with chronic pulmonary disease was also small (8). Appropriate monitoring that was needed and not carried out represented about 61 percent of the problems. Appropriate and periodic screening that was needed but not scheduled

accounted for 13.4 percent of the problems in this category and problems categorized as unspecified represented the remainder (25.6 percent).

The remainder of the disease-specific problems were grouped as "other". Of this group, almost one-third (31.0 percent) were represented by appropriate treatment that was not ordered and about one-fourth (26.9 percent) were related to appropriate periodic screening that was not scheduled. Almost one-fifth (18.7 percent) were attributed to appropriate monitoring that was needed and not carried out, and the remainder were classified as unspecified.

Of the drug-related problems that were identified, 59.1 percent were cardiac drugs, particularly diuretics and antiarrhythmic medications, as well as other non-classified cardiac medications. The next most frequent class overall was pulmonary drugs, associated with 17.8 percent of the problems. Finally, arthritis medications [e.g., non-steroidal anti-inflammatory drugs (NSAIDs)] were associated with 10.6 percent of the problems while central nervous system (CNS) drugs (e.g., Valium and Halcion) accounted for 6.4 percent of the problems overall.

Overall, the vast majority (82.3 percent) of drug problems were associated with inappropriate monitoring of drugs (e.g., a hypertensive patient on hydrochlorothiazide who had no potassium level or renal panel during the year). Inappropriate drugs or drug combinations (e.g., a diabetic patient taking Inderal, which is contraindicated) accounted for 6.8 percent of drug problems, followed by inappropriate dosage, frequency, or refill interval (e.g., inadequate refills to assure continuous therapy with potassium during the year) at 4.4 percent. Adverse reactions to drugs that were not monitored or considered (e.g., a patient who was on Calan experienced dizziness and ear buzzing and adverse reaction to drug was not considered or followed up) represented 2.5 percent of the problems. The remaining problems (3.9 percent) were categorized as other.

In the case of cardiac drugs, 84.3 percent of the problems were attributed to inappropriate monitoring and the remainder of the problems were split between inappropriate drug/drug combinations (5.5 percent); inappropriate dosage, frequency, or refill interval (3.7 percent); adverse

reactions that were not monitored (1.8 percent); and other (4.8 percent). For drug problems related to arthritis medications, there was a similar distribution in which inappropriate monitoring accounted for a large majority (74.2 percent) of the problems. Inappropriate dosages, frequency, or refill interval represented 10.2 percent of the arthritis medication problems followed by inappropriate drug/drug combinations (8.6 percent) and adverse reactions to drugs that were not monitored or considered (7.0 percent).

For problems connected with pulmonary drugs, almost all (95.8 percent) were attributed to inappropriate monitoring and the remainder (4.2 percent) were a result of adverse reactions that were **not** monitored or considered. For problems associated with central nervous system (CNS) drugs, more than one-third (38.5 percent) were attributed to inappropriate monitoring, and one-third (30.8 percent) resulted from inappropriate drug/drug combinations. Inappropriate dosage, frequency, or refill interval represented about 14.1 percent of the CNS drug-related problems while the remainder were categorized as other. The numbers of problems in the other drug groups were too small to support meaningful comparisons.

3. Comparison With Medicare HMO Problem Rates

To provide a context for interpreting the quality of care problem rates found for MHSP patients, we compared them with the problem rates computed from a similar review of a national sample of Medicare HMO enrollees. As described previously, the medical records of the HMO comparison sample had been previously reviewed by a PRO and by SuperPRO. Of the 300 cases in the HMO sample, 51 had a confirmed quality of care problem, yielding a problem rate of 17.0 percent.

This problem rate for the HMO sample is not directly comparable to the problem rate computed above for the MHSP sample becausethe review of MHSP records applied drug-specific criteria that were not applied directly to the HMO sample. To adjust for this methodological difference, we categorized **each MHSP problem case according to the type of problems that were identified during** the review. The categories included: drug only problems, non-drug only problems, or a combination

of drug and non-drug type problems. Approximately 14.1 percent of the MHSP problem cases were found to have drug-only problems while 69.2 percent had non-drug only and 15.7 percent had a combination of problem types. For this part of the analysis, cases with drug-only problems were excluded from the MHSP problem rate calculation--that is, they were not regarded as problems. Thus, the number of problem cases for the MHSP user group was reduced to 291, for an overall, adjusted problem **rate** of 32.1 percent. Using a chi-square to test for differences in problem/non-problem proportions, the adjusted problem rate for the MHSP sample was significantly higher than the 17.0 percent problem rate for the HMO sample.

Similar adjustments were made at the city-specific level, and adjusted problem rates by city were then compared to the comparison group problem rate. These comparisons are shown in the following table.

Study Group	Adjusted Problem Rate (%)	χ^2	p
Baltimore	31.8	20.315	<.001
Cincinnati	42.9	31.942	<.001
Milwaukee	48.0	43.475	<.001
San Jose	21.4	1.641	NS
Comparison Group	17.0		

The Baltimore, Cincinnati and Milwaukee MHSP patients had adjusted problem rates that were significantly higher than that of the HMO comparison group, while the problem rate for the San Jose MHSP patients was not significantly different from that of the comparison group.

4. **Relationship Between Problem Rates and Case Characteristics**

We next examined whether.quality of care problems were more likely to be found among MHSP patients with certain characteristics or certain patterns of service use. The problem rate did not vary

substantially across beneficiaries classified by age, gender, or Medicaid state buy-in status (Table IV.4). The problem rate was higher for beneficiaries who had received large numbers of medications and those who had no lab tests or only a few lab tests. Approximately 11 percent of the sample had received 11 or more medications during the year, and the problem rate for this group was 54.5 percent--considerably higher than the overall problem rate of 37.4 percent. Approximately 13 percent of the sample had no lab tests during the year, and the problem rate for this group was 50.4 percent--again considerably higher than the overall rate. These findings suggest inappropriate prescribing or monitoring behavior by MHSP physicians among many beneficiaries with large numbers of medications, as well as underutilization of needed lab studies among some beneficiaries.

Similar conclusions emerged when we compared the characteristics of cases with a quality of care problem with the characteristics of cases without a problem. For each city and all cities combined, we compared problem and nonproblem cases along the following dimensions:

- Number of MHSP physicians seen
- Number of MHSP physician encounters
- Number of medications
- Number of laboratory studies
- Number of radiology studies.

For each of these variables, we conducted t-tests to assess the statistical significance of the difference in the means between problem cases and nonproblem cases.

There were statistically significant differences between problem and non-problem cases only for the number of medications and the number of laboratory studies (Table IV.5). Across all four cities, problem cases had a significantly higher number of medications on average (4.8) than did non-problem cases (3.9). In addition, problem cases had fewer laboratory studies on average (8.1) than non-problem cases (9.9). Problem cases and non-problem cases were not significantly different with

TABLE IV.4

DISTRIBUTION OF REVIEWED AND PROBLEM CASES BY PATIENT DEMOGRAPHIC AND HEALTH CARE CHARACTERISTICS (1989)
(Weighted Results)

	Reviewed Cases		Problem Cases		
	Number	Percent	Number	Percent	Problem Rate
Total Cases	907	100.0	339	100.0	37.4
Age Distribution					
Under 65 years	66	7.3	24	7.0	36.4
65 - 74 years	443	48.8	163	48.2	36.8
75 - 84 years	328	36.2	122	36.0	37.2
Over 84 years	70	7.7	30	8.8	42.9
Gender					
Male	356	39.2	121	35.8	34.0
Female	551	60.8	218	64.2	39.6
State Buy-In Status					
Yes	66	7.2	19	5.6	28.8
No	841	92.8	320	94.4	38.0
Total Number of MHSP Physicians[1]					
o - 1	495	54.6	186	54.9	37.6
2	230	25.4	88	25.8	38.3
3	94	10.4	30	8.9	31.9
4 - 5	81	8.9	33	9.6	40.7
6-k	7	0.8	3	0.8	42.9
Number of Medications					
0	39	4.3	14	4.2	35.9
1 - 2	164	18.0	43	12.7	26.2
3 - 4	196	21.6	66	19.5	33.7
5 - 6	191	21.1	78	23.0	40.8
7 - 10	216	23.8	82	24.3	38.0
11 - 15	79	8.8	43	12.7	54.4
16 - 20	19	2.0	10	3.0	52.6
21+	3	0.4	2	0.6	66.7
Number of MHSP Physician Encounters					
1	61	6.9	25	7.4	41.0
2 - 3	210	23.5	86	25.9	41.0
4 - 5	239	26.7	88	26.4	36.8
6 - 7	178	19.9	53	16.0	29.8
8 - 10	123	13.7	41	12.3	33.3
11 - 15	69	7.7	30	9.0	43.5
16 - 20	10	1.2	9	2.6	90.0
21+	3	0.4	1	0.4	33.3
Missing	12		6		

TABLE IV.4 (continued)

	Reviewed Cases		Problem Cases		
	Number	Percent	Number	Percent	Problem Rate
Number of Laboratory Tests					
0	119	13.1	60	17.8	50.4
1 - 2	80	8.8	35	10.4	43.8
3 - 5	114	12.6	47	13.8	41.2
6 - 9	194	21.3	74	21.8	38.1
10 - 14	210	23.2	63	18.6	30.0
15 -20	110	12.1	30	8.9	27.3
21+	80	8.8	30	8.8	37.5
Number of Radiology Procedures					
0	547	60.3	216	63.9	39.5
1	200	22.1	61	18.0	30.5
2 - 3	137	15.1	51	15.2	37.2
4+	22	2.5	10	3.0	45.5

'Includes both physicians and physician extenders.

TABLE IV.5

COMPARISON OF THE MHSP SERVICE USE PATTERNS OF CASES WITH AND WITHOUT A QUALITY OF CARE PROBLEM

	Overall Mean	Baltimore Mean	Cincinnati Mean	Milwaukee Mean	San Jose Mean
Number of MHSP Physicians Seen					
Non-problem case	1.7	1.7	1.4	2.0	1.6
Problem case	1.7	1.7	1.5	1.7	1.5
Number of Medications					
Non-problem case	3.9	3.9	4.0	3.5	3.8
Problem case	4.8 **	4.8 **	5.5 **	3.7	4.8 *
Number of Laboratory Studies					
Non-problem case	9.9	10.1	8.2	9.5	10.5
Problem case	8.1 **	9.2	5.0 *	7.0	9.4
Number of Radiology Studies					
Non-problem case	0.7	0.7	0.5	0.5	0.9
Problem case	0.7	0.7	0.5	0.7	0.8
Number of Encounters					
Non-problem case	5.5	5.7	5.3	5.2	5.5
Problem case	5.6	6.0	5.3	4.0	6.2

NOTE: Overall results are weighted.

*Difference between problem and nonproblem cases is significant at the .05 level.
**Difference between problem and nonproblem cases is significant at the .01 level.

respect to the average number of MHSP physicians seen, the average number of radiology studies, or the average number of MHSP physician encounters.

We next examined whether quality of care problem rates varied substantially over MHSP patients classified by diagnosis. Many cases had multiple diagnoses. These diagnoses were mapped to the more general categories by which we analyzed the data. Circulatory system disorders were the most frequently occurring diagnoses and were noted in almost 78 percent of the reviewed cases (Table IV.6). Musculoskeletal disorders affected nearly 53 percent of the reviewed cases and was the second most frequently noted diagnostic category. Diagnoses related to the respiratory system followed as the third most frequently documented category and affected almost 37 percent of the reviewed sample. Disorders of the endocrine or immune system were observed in 27 percent of the cases, and general symptoms affected slightly more than 23 percent of the patients. The quality of care problem rate did not vary substantially across patients with these various major diagnoses. MHSP patients with neoplasms had the highest problem rate (55.3 percent), but these beneficiaries constituted only about 4 percent of reviewed cases--and thus constitute a relatively small proportion of the total MHSP patient population.

5. City-Specific Findings

In this section, we highlight the key findings for each city.

a. Baltimore

As shown in Table IV.2, of the 434 reviewed cases from Baltimore, 164 cases (37.8 percent) were found to have one or more quality of care problems. This rate approximates the overall weighted rate for the entire demonstration. The vast majority of cases (96.3 percent) were severity two problems, again very similar to the overall weighted rate. In Baltimore, problem cases had a significantly higher average number of medications than non-problem cases. The average number of medications in Baltimore for problem cases was 4.8 while the average number of medications for non-

TABLE IV.6

DIAGNOSTIC CATEGORIES RECORDED FOR MHSP CASES (1989)

Diagnostic Category	Reviewed Cases		Problem Cases		Problem Rate
	Number of Reviewed Cases [1]	Percent of Reviewed Cases [2]	Number of Problem Cases	Percent of Problem Cases	
Infectious/Parasitic	58	6.4	18	5.5	31.0
Neoplasms	38	4.2	21	6.2	55.3
Endocrine, Nutritional, Metabolic, Immunity	240	26.5	97	28.6	40.4
Diabetes Mellitus	172	19.0	73	21.4	42.4
Mental Disorders	128	14.2	54	15.8	42.2
Nervous System and Sense Organs	188	20.7	67	19.7	35.6
Circulatory System	704	77.8	279	82.3	39.6
Respiratory System	331	36.6	132	38.8	39.9
Digestive System	190	21.0	61	18.1	32.1
Genitourinary System	152	16.8	45	13.2	29.6
Skin and Subcutanwus Tissue	76	8.4	23	6.8	30.3
Musculoskeletal and Connective Tissue	476	52.6	177	52.2	37.2
Symptoms, Signs and Ill-defined Conditions	210	23.2	72	21.3	34.3
Other	271	29.9	98	29.1	36.2

NOTE: The results have been weighted to account for the different sampling rates across cities.

[1] Two cases were missing diagnoses.
[2] Percentages sum to more than 100 because some cases had two or more diagnoses.

problem cases was 3.9. There were no statistically significant differences between problem and nonproblem cases in the number of physician encounters, the number of laboratory or radiology tests, or number of physicians seen.

There were 257 problems in Baltimore noted in the 164 problem cases or about 1.6 problems per problem case. In Baltimore, as for all the sites, the majority of problems were treatment related (56.0 percent). The distribution of problems by type in Baltimore was similar to the weighted distribution for all four cities combined (Table IV.3).

b. Cincinnati

Of the 126 reviewed cases from Cincinnati, approximately 63 cases or 50.0 percent had one or more quality of care problems (Table IV.2). This rate was substantially higher than the overall weighted problem rate of 37.4 percent for the four cities combined. Nearly all of the problem cases from Cincinnati were classified as severity two problems. As shown in Table IV.5, problem cases in Cincinnati had a significantly higher number of medications on average than non-problem cases (5.5 versus 4.0). Moreover, in Cincinnati, but not in any other site, the average number of laboratory tests was significantly lower for problem cases (5.0 tests) than for nonproblem cases (8.2 tests). There were no other statistically significant differences between problem cases and non-problem cases.

There were 117 problems in Cincinnati or about 1.9 problems per reviewed case. As shown in Table IV.3, the majority of problems were treatment related (62.4 percent). In general, the distribution of problems by type in Cincinnati was similar to the weighted overall distribution, although the proportion of disease-specific problems in Cincinnati (11.1 percent) was somewhat lower than the rate for all sites combined (16.0 percent).

c. **Milwaukee**

Of the 123 reviewed cases from Milwaukee, 59 cases (48.0 percent) had quality of care problems. This was somewhat higher than the 37.4 percent problem rate found for the four cities combined.

We found no statistically significant differences between problem and non-problem cases in the number of physicians seen, encounters, medications, laboratory studies, and radiology tests (Table IV.5). Milwaukee was the only site where the number of medications provided to problem cases was not significantly higher than the number provided to non-problem cases.

There were 115 problems in Milwaukee or about 1.9 problems per problem case. As shown in Table IV.3, the percentage of problems in Milwaukee that were treatment related (77.4 percent) was higher than the corresponding percentage for all four cities combined (59.2 percent). This was directly attributable to problems related to inadequate baseline data. In contrast, the proportion of drug-related (15.7 percent) and disease-specific problems in Milwaukee (7.0 percent) were somewhat lower than the corresponding rates for all sites combined (24.1 percent and 16.0 percent, respectively).

d. San Jose

Of the 224 reviewed cases from San Jose, 62 cases (27.7 percent) had quality of care problems. This was the lowest problem rate among the four sites. As in other cities, the vast majority of problems (87.5 percent) were classified as level two problems. As shown in Table IV.5, the average number of medications for problem cases (4.8) was significantly higher than the average number of medications for non-problem cases (3.8). There were no statistically significant differences between problem cases and nonproblem cases in the number of physicians seen, encounters, laboratory tests, or radiology tests.

There were 96 problems in San Jose or about 1.5 problems per problem case. Examining the distribution of problems by type (Table IV.3), we note that the largest group of problems were treatment-related (47.9 percent). However, this rate is somewhat lower than the overall weighted rate of treatment problems (59.2 percent). In contrast, the proportion of disease-specific problems in San Jose (24.0 percent) was higher than the rate for all sites combined (16.0 percent). The

proportion of drug-related problems in San Jose (27.0 percent) was similar to the overall rate for all cities (24.1 percent).

C. DISCUSSION

The analysis of the quality of care provided to MHSP users was based on a review of 907 medical records. No severity level three problems (i.e., problems that resulted in observable, significant adverse effects on the patient) were found in either the review of MHSP patients or the review of the Medicare HMO comparison group. However, more than one-third (37.4 percent) of the reviewed MHSP cases had one or more quality of care problems. Most of the problems identified had the potential for a significant adverse impact on the patient (severity level two). Thus, the problems were not trivial.

The problems we observed were related primarily to omissions of care (i.e., treatment, monitoring, and follow-up that was needed but not provided), rather than to the provision of unnecessary care. The majority of the confirmed quality of care problems were related to initial or continuous treatment by the physician. Most of the problems in this category were related to omissions in the collection of baseline data and omissions in the provision of ancillary services, patient teaching, consultations, and so forth. It is important to emphasize that the review methodology was designed to avoid counting as quality of care problems minor inadequacies in the documentation contained in the medical records. The remaining problem types were drug-related and disease-specific, and these also reflected omissions in care.

We compared the findings for the MHSP sample to findings from a comparison group of Medicare HMO users whose care was reviewed by a PRO and by SuperPRO. Those findings showed a 17.0 percent problem rate for the comparison group, which was significantly lower than the corresponding rate for MHSP users even after we adjusted the MHSP problem rate downward to account for the lack of data on practitioner drug prescribing and monitoring behavior for the HMO

comparison group. Three of the four site-specific problem rates were significantly higher than the comparison group rate.

It is important to note that these findings reflect only information about the process of care that is evident in medical records maintained by the sites. To some extent, apparent quality problems are likely to be attributable to incomplete documentation in the medical record and/or differences in medical judgement among clinicians, and/or may not be indicative of the overall process of care for clients who received some services outside the MHSP clinics. Also, as an assessment of the process of care, measures of actual health outcomes or patient satisfaction are not reflected in the findings. Detailed documentation on each apparent quality problem will be shared with the MHSP sites, so they can assess the actual extent of quality concerns and develop corrective actions where necessary.

V. COST PROJECTIONS

The total cost of the Municipal Health Services Program (MHSP) Demonstration to Medicare has been rising rapidly, with an average annual rate of increase of 17.4 percent from fiscal year 1985 (FY85) to fiscal year 1990 (FY90). Total MHSP Medicare demonstration costs more than doubled during this period. In this chapter, we examine past trends in MHSP Medicare costs and project these costs for the remaining period of the demonstration. The following sections describe the methodology used and the resulting projected costs. Both city-specific and overall trends and projections are presented and discussed.

A. METHODOLOGY

We obtained Medicare Cost Reports for each MHSP clinic and each year from FY85 through FY90.[1] The data in these reports were used to project Medicare costs under the demonstration from FY91 through FY93. Our base period for the cost projections ended with FY90 because cost reports for later years have not been settled. (In fact, not all FY90 cost reports have been settled, as we discuss below.) From the cost reports, we extracted total Medicare costs by service type. Administrative costs were allocated to each service type by the clinic's step-down procedures. Services comprising a small fraction of total costs and/or offered by only a few clinics or for only a few years were aggregated into an "other services" category. These services include speech therapy, occupational therapy, and electrocardiogram (EKG) services. We then aggregated costs across clinics within each MHSP city for each of the 14 remaining service categories.

'The fiscal year varies among the sites. For Baltimore and San Jose, it runs from July through June. For Cincinnati and Milwaukee, it runs from January to December. No adjustments were made to align the fiscal year when adding costs across sites.

1. Projection Procedures

An analysis of cost trends revealed that the growth in total MHSP costs for the demonstration as a whole and for Baltimore and San Jose was approximately linear over the period from FY85 through FY90. In Milwaukee and Cincinnati, however, MHSP Medicare costs leveled off somewhat in the FY88-FY90 period. Therefore, we fit both linear and quadratic growth models to each service category in each city. In the linear models, each category of MHSP costs was specified as a linear function of a constant and a time trend variable.[2] In the quadratic models, an additional term equal to the square of the time trend variable was included to allow for a nonlinear growth path. Both types of models were estimated using ordinary least squares (OLS) regression techniques.

The quadratic models produced unsatisfactory results--e.g., some negative and some unreasonably high forecasts. Therefore, we based our projections on the linear growth models. In most cases, we estimated the linear growth models using data for the entire baseline period--i.e., FY85 through FY90. In some cities, however, the growth in costs for some services slowed considerably in the latter portion of the baseline period. For these services, we estimated the models using data only from the latter portion of the baseline period, thus assuming that the slower growth in costs during that period would have continued in the projection period. The discussion that follows describes our approach to the projections in each city.

For Baltimore, we estimated linear growth models using data from FY85 through FY90 for all services, except three ancillary services which were offered for the first time during the baseline period--physical therapy, transportation, and audiology. Because these three services are a very small percentage of MHSP costs in Baltimore (only about 1.5 percent in 1990), the assumptions we made

[2]The time trend variable was set equal to 1 for 1985, 2 for 1986, and so on.

for these three procedures did not have a noticeable effect on our projections of total MHSP costs in Baltimore.[3]

The Cincinnati MHSP experienced very steep growth in costs for routine care, pharmacy and podiatry services from FY85 to FY86 and more moderate growth thereafter. Therefore, for these services, the FY85 observations were dropped and linear growth models were estimated with data from the FY86-FY90 period. For the other six ancillary services offered at the city, linear growth models were estimated with data from FY85 through FY90.

To account for the marked slowing in the growth of MHSP Medicare costs for several service types in Milwaukee during the latter part of the FY85-FY90 period, we dropped the first two observations (i.e., FY85 and FY86) before estimating the linear growth models for those services. These services include radiology, laboratory, transportation, dental, optometry, podiatry and the "other services" category. Costs for psychology services fell more than 80 percent in FY90 from their level a year earlier in the Milwaukee MHSP. Because of the uncertainty of the future of these services at the city, we assumed their total costs would remain at the low FY90 level throughout the projection period. All other services were estimated with linear growth models and data for the entire base period (FY85-FY90).

Finally, for San Jose we estimated linear growth models for the costs of routine care and of all but one of the 11 ancillary service categories offered with data from the entire base period. The only exception was psychology services, which were offered in San Jose for the first time in FY90. We assumed that, throughout the projection period, these services grew at a 10 percent annual rate of growth, which is approximately the average rate of growth of all ancillary services at the city.

[3]Physical therapy was not initiated until FY88, resulting in only three years of data. Because a minimum of four observations are needed to estimate the linear model, we could not estimate the trend for this service category. Therefore, we assumed that costs for physical therapy rose a moderate rate of 5 percent a year. Transportation and audiology services were initiated in FY87. Linear growth models were then estimated for both of these service categories with data from FY87 through FY90. For all other services, the models were estimated with data from FY85 through FY90.

The estimated service-specific regression coefficients were then used to calculate projected costs for each service category by city and across cities for each projection year (FY91-FY93). Total projected costs were calculated by aggregating projected service-specific costs by city and across cities for each projection year. These data are presented below in both tabular and graphical form.

Our approach to the MHSP cost projections is fairly straightforward. A more sophisticated approach would have been to disaggregate the growth in MHSP costs into various components, such as (1) the growth in the number of MHSP patients, (2) changes over time in the percentage of MHSP patients using each type of service, (3) growth in the number of units of service per user of that service, and (4) growth in the cost per unit of service. We did not use such an approach for several reasons. First, much of the information required to implement such an approach is not available from the cost reports. The only item in the above list available from the cost reports is the cost per routine visit. Unit costs are not available for any ancillary services? Furthermore, the cost per routine visit has been highly unstable over time in many clinics (see Wright et al. 1992, pages 187-189). Given this instability, it would not have been possible to reliably predict the future path of the cost per routine visit. Thus, we chose to use the projection procedure described above, which did not require us to develop projections for the unit cost of routine visits or other services.

2. Limitations of the MHSP Cost Report Data

During the site visits for the case study, we discovered several limitations of the MHSP cost reports. First, the allocation of administrative costs over the service categories is not uniform across clinics_ Each clinic independently determines, within the bounds of allowable Medicare accounting practices, how it will assign general administrative and other overhead costs to specific service categories or "cost centers," as well as the composition of these costs. For example, one city did not include malpractice insurance as part of its administrative costs. Second, definitions for specific

[4]Even the MHSP claims do not contain costs per unit of service for ancillary services. The claims give the total charges by type of service, but not the number of units of the service represented by those charges.

service categories vary across clinics and cities. This problem is particularly acute with respect to routine visits. Although defined as a face-to-face encounter between a patient and a clinic physician or physician extender, encounters with nurses, podiatrists, and mental health and other specialists are sometimes counted by clinic staff as routine visits. Furthermore, assignment rules and service definitions used in a given clinic may change over time.

Another limitation of the cost reports is that, except for San Jose, the cost reports for FY90 have not been settled, and are thus not final determinations of reimbursable costs. An examination of differences between interim and final determinations of reimbursable costs in past years has shown that these differences can be significant. In a comparison of 13 "unsettled" cost reports with their subsequent "settled" versions, differences between initial and final assessments of total Medicare payments to MHSP clinics varied from -11 percent to +13 percent. Including 1990 cost reports in our base period for the cost projections may therefore introduce some bias into the future projections. However, we believe that the magnitude of any such bias is relatively small and is outweighed by the benefits of including the more current data.

B. MHSP MEDICARE COST TRENDS, FY85-FY90

Total MHSP Medicare costs rose from $14.6 million in FY85 to $34.8 million in FY90. The Baltimore MHSP accounted for the largest proportion of total MHSP Medicare costs, with its share of costs growing over time. Over $8.7 million, or 60 percent of total costs, in FY85 and $22.7 million, or 65 percent of total costs, in FY90 were incurred in Baltimore. San Jose accounted for the second largest proportion of total MHSP Medicare costs--$3.0 million in FY85 and $7.4 million in FY90--maintaining a 21 percent share of costs throughout the analysis period. Milwaukee accounted for $2.1 million, or 14 percent of total costs, in FY85 and $3.5 million, or 10 percent of total costs, in FY90. Cincinnati had the smallest share of total costs; the city incurred $680,960, or 5 percent of total costs, in FY85 and $1.3 million, or 4 percent of total costs, in FY90.

The shifting shares of MHSP Medicare costs are due to differential growth rates among the cities over the period FY85-FY90. Baltimore experienced the highest annual rate of growth in total costs (19.1 percent), followed by San Jose (17.6 percent), Cincinnati (12.7 percent), and Milwaukee (9.9 percent). Overall, the average annual rate of growth for total MHSP Medicare costs from FY85 to FY90 was 17.4 percent.

In all cities and in all years, costs for ancillary services were substantially higher than costs for routine care. However, there were differences over time and among cities in the percentages of total costs accounted for by ancillary services. In FY90, ancillary costs accounted for 85 percent ($29.5 million) of total costs among all cities combined. This was up from 75 percent ($10.9 million) of total costs in FY85. At the same time, the share of total costs accounted for by routine care fell from 25 percent ($3.6 million) of total MHSP costs in FY85 to 15 percent ($5.4 million) in FY90.

The rate of growth in costs for total ancillary services exceeded the rate of growth for total routine services at all sites, with the difference in growth rates especially notable in Baltimore. Overall, the average annual growth rates for total ancillary costs and total routine care costs were 19.8 percent and 7.8 percent, respectively. In Baltimore, the growth rates in costs were 22.6 percent for ancillary services and 3.3 percent for routine care.

The Baltimore and Milwaukee programs offered the greatest array of ancillary services and had the highest proportions of total costs accounted for by ancillary services. In Baltimore, 75 percent ($6.5 million) of total MHSP Medicare costs in FY85 and 88 percent ($20.1 million) in FY90 were for ancillary services. In Milwaukee, the comparable figures were 81 percent ($1.7 million) in FY85 and 82 percent ($2.8 million) in FY90. The Cincinnati MHSP offered the fewest ancillary services and had the lowest proportions of total costs accounted for by ancillary care costs--68 percent ($461,754) in FY85 and 69 percent ($891,695) in FWO--followed by San Jose, with 74 percent ($2.3 million) of total costs incurred for ancillary services in FY85 and 77 percent ($5.6 million) in FY90.

Pharmacy services--the largest single component of ancillary service costs--accounted for 26 percent ($3.7 million) of total MHSP Medicare costs in FY85 and 34 percent ($11.9 million) in FY90. In FY90, the second largest component of total MHSP costs was dental services (16 percent), followed by routine care (15 percent), dentures (13 percent), laboratory services (7 percent), podiatry (5 percent), optometry (2 percent), psychology (2 percent), radiology (2 percent), eyeglasses (2 percent), and transportation (1 percent). All other services accounted for less than 1 percent of total MHSP Medicare costs.

C. PROJECTED MEDICARE MHSP COSTS, FY91-FY93

Projected annual MHSP Medicare costs for FY91 through FY93 for the demonstration as a whole are shown in Table V.1, along with actual costs for FY85 through FY90. Projected total MHSP Medicare costs are $38.2 million for FY91, $42.2 million for FY92, and $46.1 million for FY93. This represents a 33 percent increase in total costs from FY90 to FY93 and an average annual rate of growth of 9.4 percent over the projection period. The growth in total Medicare MHSP costs from FY85 through FY90 and the projected growth in costs from FY91 through FY93 is depicted graphically in Figure V. 1.

The greatest growth in MHSP costs is expected for ancillary services which are projected to grow at a rate of 9.6 percent a year from FY90 to FY93 (Table V.2). Routine care costs are expected to grow at a rate of 8.3 percent per year during this period. Among ancillary services, pharmacy, radiology, transportation, dental, audiology and psychology services are expected to grow faster than average and to account for larger shares of total MHSP Medicare costs in FY93 than in earlier years. Pharmacy services alone are expected to account for 37 percent of all MHSP Medicare costs in FY93, up from 26 percent in FY85.

The distribution of MHSP Medicare costs across cities is expected to change little during the projection period. Baltimore will account for 66 percent of total MHSP expenditures in FY93, San

TABLE V.1

ACTUAL MHSP MEDICARE COSTS FY85-FY90 AND PROJECTED
MHSP MEDICARE COSTS FY91-FY93 ALL MHSP SITES

	Actual						Projected		
Service Type	FY85	FY86	FY87	FY88	FY89	FY90**	FY91	FY92	FY93
Routine	$3,644,303	$3,912,907	$4,160,302	$5,353,255	$5,420,245	$5,369,289	$6,069,437	$6,475,747	$6,882,057
Physical Therapy	101,189	97,9 19	131,436	166,582	198,237	188,747	205,380	210,053	210,213
Radiology	243,141	338,575	44 1,056	69 1,707	639,843	643,210	749,855	808,772	867,690
Laboratory	1,134,147	1,025,259	1,399,083	1,747,301	1,893,196	2366,297	2,410,616	2,625,997	2,84 1,378
Pharmacy	3,718,132	4,611,852	6,504,540	9,042,326	10,251,791	11,949,320	13,694,662	15,406,612	17,118,563
Transportation	146,048	156,729	196,882	3 10,839	403,608	434,425	511,925	578,015	644,105
Dental Services	2,033,466	2558,846	2,952,409	3,596,344	4,767,897	5,473,302	5,975,037	6,658,888	7,342,738
Audiology	3,469	4,077	78,850	133,083	134,820	88,143	117,205	121,167	125,128
Optometry	370,577	472,605	539,571	6 17,803	735,258	742,54 1	83 1,070	898,949	966,828
Podiatry	567,325	1,006,365	1,315,471	1,261,016	1,384,588	1,886,177	1,997,836	2,213,400	2,428,964
Dentures	2,169,780	2,581,212	2,492,05 1	2,576,750	3,179,208	4,375,288	4,186,338	4,555,087	4,923,836
Eyeglasses	272,833	326,759	377,98 1	458,039	446,257	566,434	598,706	653,179	707,652
Psychology	109,061	221,940	336,9 16	538,834	562,113	708,276	818,279	933,347	1,048,643
Other Services*	53,320	202,420	24,360	39,726	34,935	31,534	36,857	38,55 1	40,246
Total **Ancillary**	$10,922,488	$13,604,558	$16,790,606	$21,180,350	$24,631,75 1	$29,453,694	$32,133,766	$35,702,018	$39,265,984
Total **Routine and Ancillary**	$14,566,79 1	$17,517,465	$20,950,908	$26,533,605	$30,051,996	$34,822,983	$38,203,203	$42,177,764	$46,148,041

*Includes speech therapy, occupational therapy, EKG, and other.
**Cost data for FY 1990 have not been settled.

FIGURE V.1

ALL MHSP SITES ACTUAL COSTS FOR 1985-1990
AND PROJECTED COSTS FOR 1991-1993

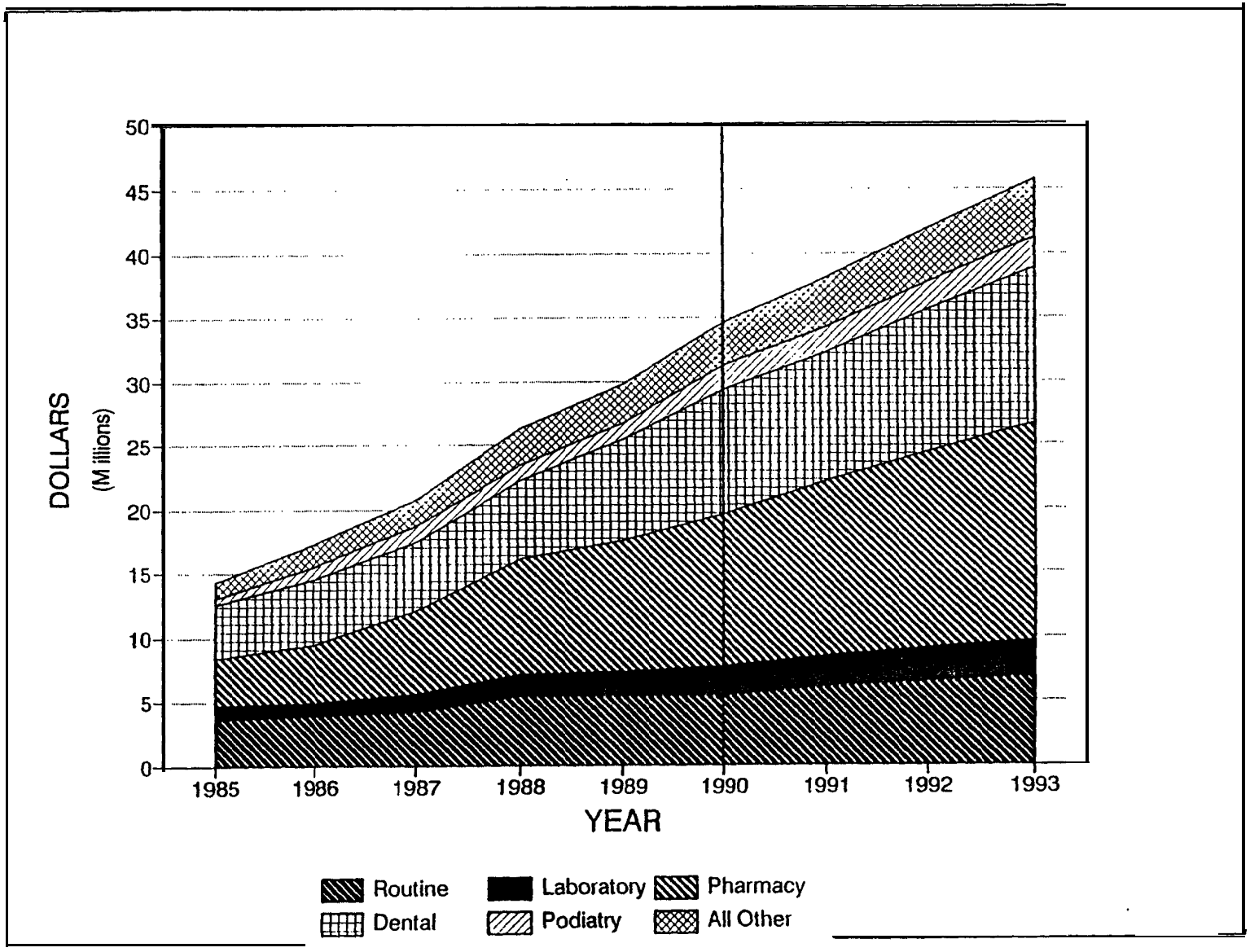


TABLE V.2

PERCENTAGE DISTRIBUTION OF MHSP MEDICARE COSTS AND GROWTH RATES IN COSTS BY SERVICE TYPE, SELECTED YEARS, FY85-FY93 ALL MHSP SITES

	Percentage Distriiution			Average Annual Growth Rate	
Service Type	FY85	FY90	FY93	FY85-FY90*	FY90-FY93*
Routine	25.0 %	15.4 %	14.9 %	7.8 %	8.3 %
Physical Therapy	0.7	0.5	0.5	12.5	3.6
Radiology	1.7	1.8	1.9	19.5	10.0
Laboratory	7.8	6.8	6.2	14.7	6.1
Pharmacy	25.5	34.3	37.1	23.3	12.0
Transportation	1.0	1.2	1.4	21.8	13.1
Dental Services	14.0	15.7	15.9	19.8	9.8
Audiology	0.0	0.3	0.3	64.7	11.7
Optometry	2.5	2.1	2.1	13.9	8.8
Podiatry	3.9	5.4	5.3	24.0	8.4
Dentures	14.9	12.6	10.7	14.0	3.9
Eyeglasses	1.9	1.6	1.5	14.6	7.4
Psychology	0.7	2.0	2.3	37.4	13.1
Other Services	0.4	0.1	0.2	-10.5	8.1
Total Ancillary	75.0 %	84.6 %	85.1 %	19.8 %	9.6 %
Total Routine and Ancillary	**100.0 %**	100.0 %	100.0 %	17.4 %	9.4 %

*Growth rates shown are the average annual compounded rate of growth.

Jose will account for 22 percent, Milwaukee 9 percent, and Cincinnati less than 4 percent. Cost projections for each site are described in greater detail below.

1. Baltimore

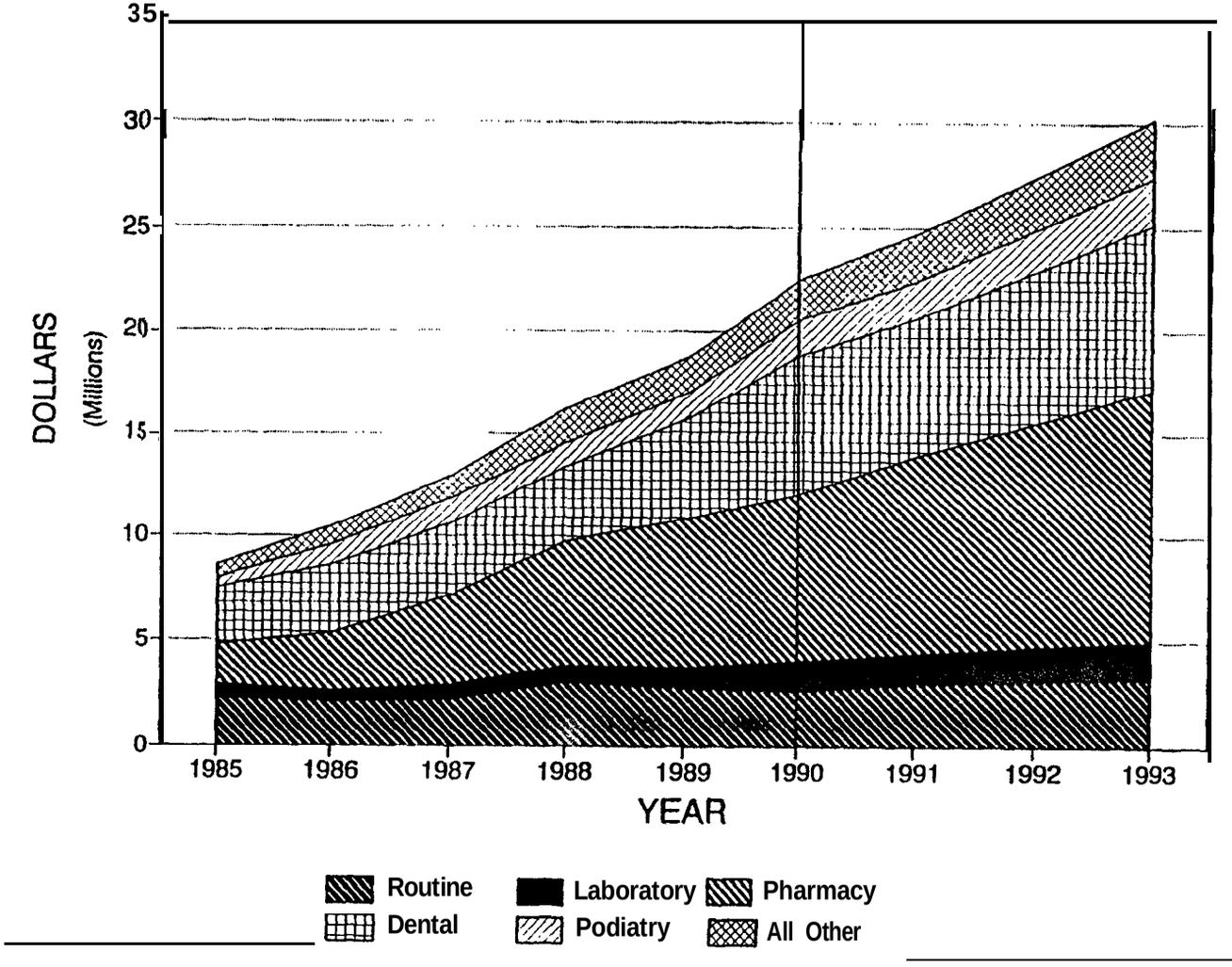
As noted above, MHSP Medicare costs in Baltimore from FY85 to FY90 display a steep linear growth trend. We assumed that this pattern of growth would continue in the projection period. As shown in Appendix Table B.l, projected total Medicare costs for the Baltimore MHSP are $24.8 million for FY91, $27.6 million for FY92, and $30.3 million for FY93. Costs are projected to increase at an average annual rate of 9.6 percent, making total MHSP costs at the site one-third higher in FY93 than in FY90. The growth in MHSP costs during the base period and the projection period is depicted graphically in Figure V.2.

Costs for all service types offered at the Baltimore MHSP are expected to increase over the projection period. Routine care costs are predicted to increase at an average annual rate of 6.7 percent in the projection period while ancillary services are predicted to increase at an average annual rate of 10 percent. As a result, the share of total MHSP costs accounted for by routine care is expected to continue to fall during the projection period, comprising just over 10 percent of FY93 costs. At the same time, ancillary costs will comprise nearly 90 percent of total MHSP costs in FY93 (see Appendix Table B.2)

The largest component of projected total costs in each year is the cost of pharmacy services. These costs are projected to increase at an average annual rate of 13.8 percent over the projection period and to account for 40 percent of total MHSP Medicare costs at the Baltimore site in FY93. This compares to 22 percent in FY85 and 35 percent in FY90. Costs for dentures, the second largest component of ancillary service costs are expected to grow at a modest 2.9 percent rate of growth annually over the projection period and to account for only 14 percent of all costs in FY93, down from 17 percent in FY90. Dental service costs, are expected to maintain their 13 percent share of total costs, increasing at an average annual rate of 9.6 percent in the projection period. Other

FIGURE V.2

BALTIMORE MHSP ACTUAL COSTS FOR 1985-l 990
AND PROJECTED COSTS FOR 1991-1993



services that are expected to exhibit strong growth trends in the FY91-FY93 period are radiology, transportation, audiology and psychology--but none of these services comprise more than a few percent of total MHSP costs.

At the time of our site visits, four of the five clinics at the Baltimore site were working at capacity because of space constraints (Brehms Lane and Washington Village) or staffing problems (Albert Witzke and Matilda Koval). Although space constraints are likely to continue during the period of our projections, staff constraints may not. Therefore, the projected moderate increase in routine care costs are likely to occur from moderate increases in patient volume due to the increased staffing levels. On the other hand, a number of subcontracts with specialist providers have been favorably renegotiated, and administrative costs are expected to grow more slowly than in the past. These latter factors may have a dampening effect on the growth of ancillary service costs and overall MHSP Medicare costs in Baltimore.

Comparing our projected costs to the actual costs from the "unsettled" cost report for FY91, as shown in Appendix Table B.3, we find that our total projected FY91 cost for Baltimore exceeds the total cost on the unsettled cost report by 2.7 percent. The projected cost for 1991 yielded by our models is thus relatively close to the value on the unsettled FY91 cost reports. As noted above, however, the latter costs are subject to change once the cost reports are settled.

2. **Cincinnati**

While MHSP Medicare costs in Cincinnati grew throughout the FY85-FY90 period, the growth was not as steady or as steep as experienced in Baltimore. Between FY86 and FY87 budget shortfalls led to a hiring freeze, which limited capacity because physicians and nurses could not be replaced. Consequently, costs grew more slowly from FY86 to FY87, but increased more rapidly in FY88. At the time of the site visits, two of the three Cincinnati clinics (Northside and Braxton Cann) were operating at capacity, but neither clinic was fully staffed. We assumed that the moderate rate of

growth seen for key services, such as routine care and pharmacy services, in the FY86-FY90 period would continue in the projection period.

Projected total Medicare costs for the Cincinnati MHSP are $1.4 million in FY91, $1.5 million in FY92, and $1.6 million in FY93 (see Appendix Table B.4) Total MHSP costs in Cincinnati are projected to grow at an average annual rate of 6.9 percent in the FY90-FY93 period and to be 23 percent higher at the end of the period than in FY90. The projected growth in MHSP costs is depicted graphically in Figure V.3.

Routine care costs are predicted to grow at a slightly higher average annual rate than ancillary service costs in Cincinnati--9.1 percent compared to 5.9 percent (Appendix table B.5). The percentage of total MHSP Medicare costs accounted for by ancillary services is expected to fall back to 67 percent in FY93 from 69 percent in FY90. Among the ancillary services, laboratory services, podiatry services, and eyeglasses are expected to have the greatest percentage increases in costs over the projection period. But among these services, only laboratory comprises a substantial share of total costs--6.6 percent in FY93. Costs for pharmacy services, the largest component of ancillary costs, are expected to grow at a modest 24 percent a year and to comprise only 28 percent of total MHSP costs in FY93, down from 32 percent in FY90. Dental services, the second largest component of ancillary services, is expected to grow at a higher 7.6 percent and to maintain its share of total costs throughout the projection period.

3 . Milwaukee

MHSP Medicare costs in Milwaukee show a marked slowing in growth in the FY88-FY90 period compared to the FY85-FY88 period, as can be seen in Figure V.4. This slowing was due to several factors, including complete turnovers in staff at the Johnston clinic in FY88 and at the Isaac Coggs clinic in FY88 and FY90 and to the closing of the Capitol Drive clinic in FY90.

Patients from the Capitol Drive clinic were referred to the Isaac Coggs clinic, which had no waiting list and showed no other indications of unmet demand at the time of the site visit. However,

FIGURE V.3

CINCINNATI MHSP ACTUAL COSTS FOR 1985-1990
AND PROJECTED COSTS FOR 1991-1993

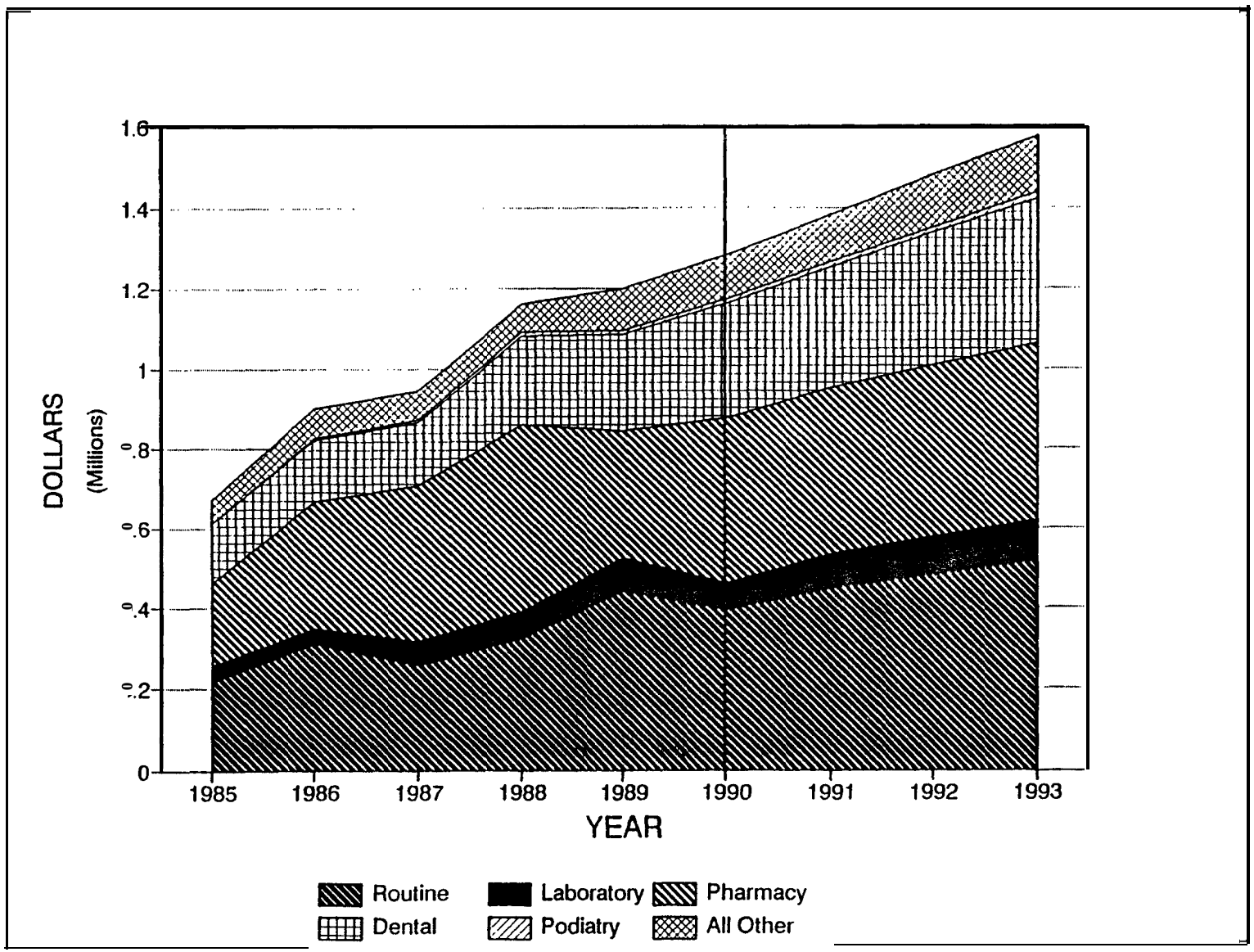
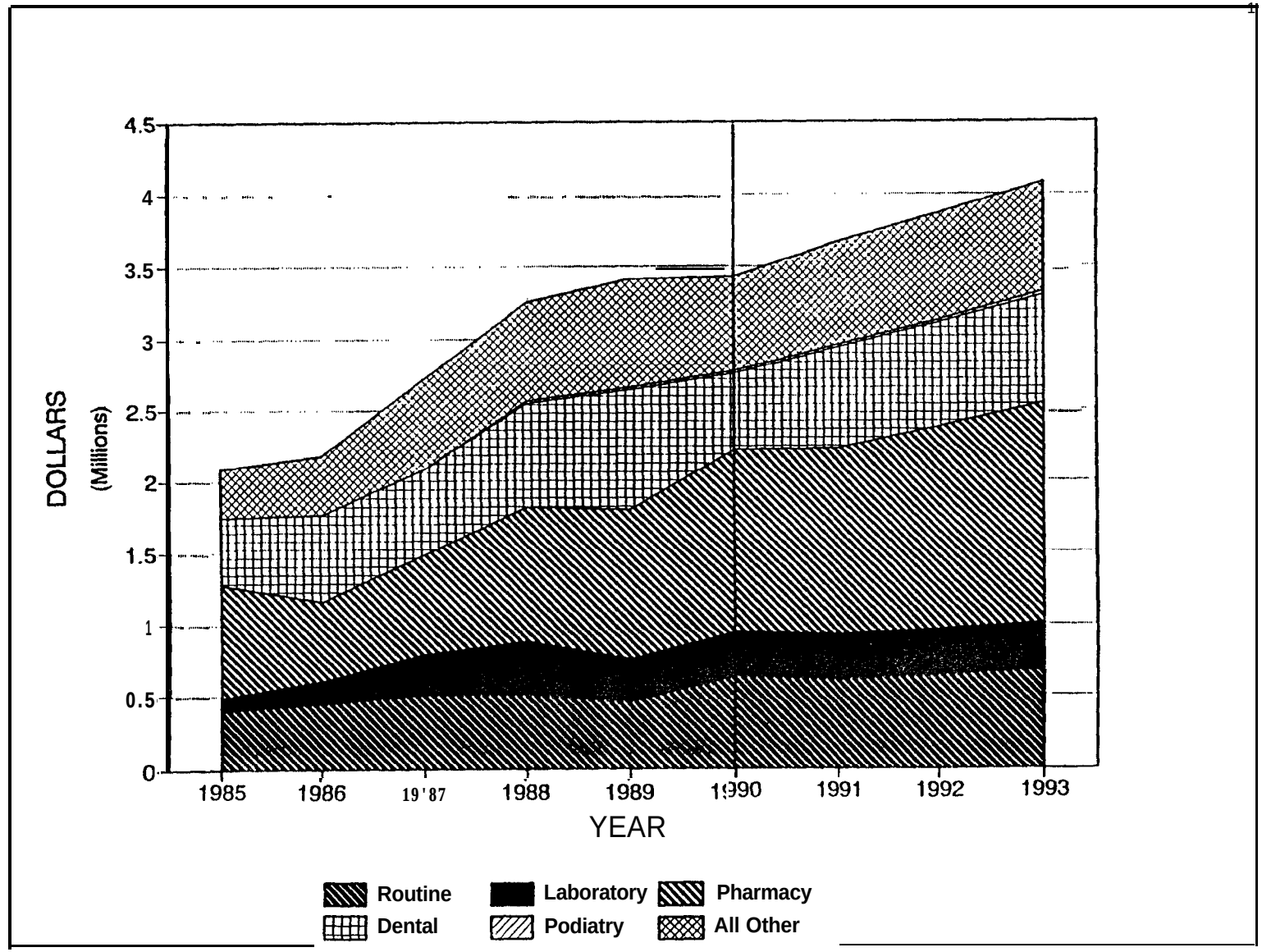


FIGURE V.4

MILWAUKEE MHSP ACTUAL COSTS FOR 1985-1990
AND PROJECTED COSTS FOR 1991-1993



the closed center did not offer a full array of ancillary services. As a result, Capitol Drive patients may have been receiving ancillary care at the other two clinics prior to FY90. Because we lack data on patients using multiple clinics, the extent to which patients from Capitol Drive were receiving ancillary services from the other clinics is unknown, and, hence, the effect of the closing of the Capitol Drive clinic on future MHSP Medicare costs is uncertain.

We project total Medicare costs for the Milwaukee MHSP to be $3.7 million in FY91, $3.9 million in FY92, and $4.1 million in FY93 (see Appendix table B.6). Overall, MHSP Medicare costs in Milwaukee are predicted to increase at an average annual rate of 5.6 percent from FY90 to FY93. Routine care costs in the Milwaukee MHSP are predicted to increase more slowly than ancillary services--at an average annual rate of 2.3 percent compared to a rate of 6.4 percent (see Appendix Table B.7). As a result, the share of total MHSP costs attributable to routine care is expected to fall to 17 percent and the share attributable to ancillary services is expected to increase to 83 percent in FY93.

Costs for pharmacy services, the largest single component of ancillary and total MHSP costs, are predicted to increase by 6.2 percent a year in the projection period and to comprise 38 percent of total MHSP costs in FY93. Costs for dental services are expected to grow by 10.1 percent a year in the projection period and to comprise 14 percent of total MHSP costs in FY93. Strong growth is also expected in costs for transportation, optometry, dentures, and the other services category.

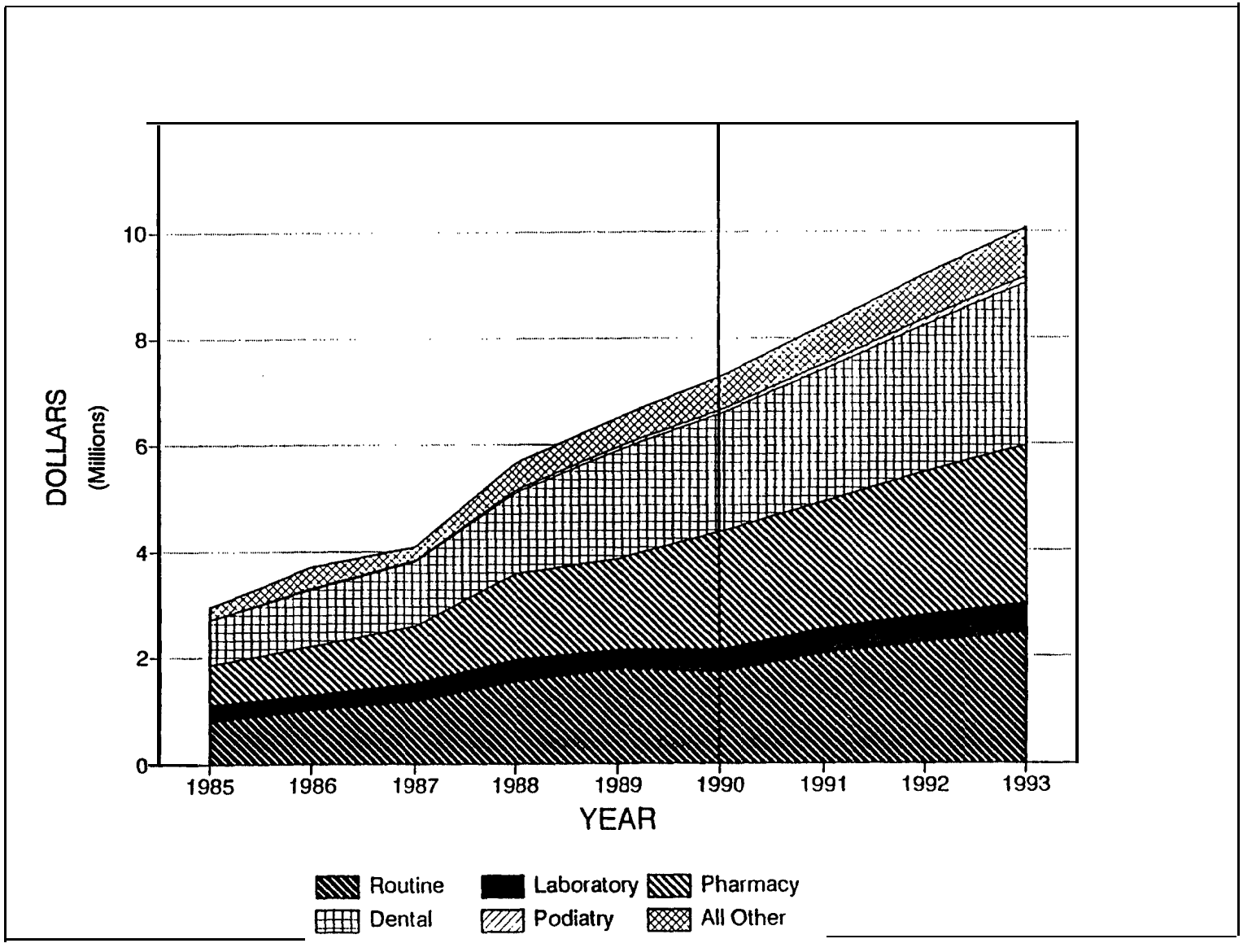
4. **San** Jose

Projected total MHSP Medicare costs for the San Jose MHSP are $8.3 million for FY91, $9.2 million for FY92, and $10.1 million for FY93 (see Appendix Table B.8). Overall costs are projected to increase at an average annual 10.7 percent rate of growth from FY90 to FY93. The growth in MHSP costs is depicted graphically in Figure VS.

Pharmacy, dental, and routine services form the largest components of total MHSP costs in San **Jose,** and all are expected to experience high rates of growth in the projection period. Pharmacy

FIGURE V.5

SAN JOSE MHSP ACTUAL COSTS FOR 1985-1990
AND PROJECTED COSTS FOR 1991-1993



costs are predicted to grow at an average annual rate of 9.9 percent and to comprise almost 30 percent of total costs in FY93; costs for dental services are expected to grow by 10.3 percent a year and to comprise one-fourth of total costs in FY93; and routine services are predicted to increase by 12.3 percent a year and to comprise 24 percent of total costs in FY93 (Appendix Table B.9). Overall costs for ancillary services are expected to grow somewhat more slowly than routine care costs. However, radiology, optometry, podiatry, transportation, dentures and eyeglasses are all expected to grow at rates greater than 10 percent a year.

Although our projections indicate high rates of growth for most services, there are a variety of factors that were not taken into account and that could constrain rates of growth during the projection period. For example, the two county clinics and the Gardner clinic in San Jose were operating at capacity at the time of the site visit. In addition, the extent of unmet demand, future staffing levels, and hours of operation are unknown, as is the potential impact of these factors on projected costs. Projected cost estimates should therefore be interpreted cautiously.

D. IMPLICATIONS FOR THE 1993 MEDICARE BUDGET

The total costs to Medicare of the services provided under the MHSP Demonstration are projected to be $46.148 million in 1993. In Chapter III, we estimated that in 1989 the MHSP Demonstration resulted in a net increase in costs to the Medicare program of $463 per beneficiary, an increase of 11.8 percent. The average cost to Medicare of services provided under the demonstration in 1989 was $984 per beneficiary (see Table 111.1). Thus, in 1989 each dollar spent by the Medicare program on MHSP services resulted in a net increase in total Medicare program expenditures of approximately 47 cents (463/984 = 0.47). To project these findings forward to 1993, we assume that the average cost of MHSP services per beneficiary increased from 1989 to 1993 at the same rate as the average cost of regular (non-MHSP) Medicare services. Under this assumption, every dollar spent by Medicare on MHSP services in 1993 would result in a net increase in total Medicare expenditures of 47 cents (i.e., the same relationship as existed in 1989). Applying this

estimate to the projected Medicare cost of MHSP services in 1993 ($46.148 million), we estimate that the MHSP Demonstration will result in a net increase in total Medicare expenditures in 1993 of $21.690 million.

VI, CONCLUSIONS

The MHSP Demonstration is unusual in that it has been operational for over ten years. It was originally implemented in the late 1970s with funding from the Robert Wood Johnson Foundation (RWJF) to help cities improve access to primary and preventive health care services for inner city residents of all ages. After the termination of RWJF funding in 1984, however, the MHSP became a Medicare-only demonstration. In this report, we described the organization and operations of the MHSP Demonstration in each city, estimated the effects of the demonstration on service use and Medicare costs, evaluated the quality of care provided under the demonstration, and projected future Medicare MHSP costs through 1993.

A. SUMMARY OF FINDINGS

The four cities participating in the demonstration have developed programs which differ significantly in organization, scale, and character. Baltimore has developed a much larger program than the other three cities. In 1990, total Medicare expenditures for MHSP services were $34.82 million, of which $22.73 million (or 65.3 percent) went to Baltimore, $7.35 million (21.1 percent) went to San Jose, $3.45 million (9.9 percent) went to Milwaukee, and $1.29 million (3.7 percent) went to Cincinnati. These differences across cities in MHSP costs reflect differences in the number of patients served, as well as differences in service volume and the range of services offered.

One of the significant differences across cities is the composition of patients at the MHSP clinics. Medicare beneficiaries comprise a much higher percentage of the total patient load at the MHSP clinics in Baltimore than in the other cities. At the largest clinic in Baltimore, which saw about 10,000 Medicare beneficiaries in 1990, Medicare beneficiaries account for about 95 percent of all medical visits. At the next two largest clinics in Baltimore, which each saw about 5,000 Medicare beneficiaries in 1990, Medicare beneficiaries account for over 85 percent of all medical visits. The largest MHSP clinics in Baltimore have thus focused primarily on the treatment of Medicare

beneficiaries. At the opposite end of the spectrum is Cincinnati, where the MHSP has been integrated into a network of clinics that provide health care to low income residents of all ages. Medicare beneficiaries account for less than a quarter of all medical visits in the Cincinnati clinics. The Cincinnati clinics reportedly are treating growing numbers of uninsured patients, through funding sources other than the MHSP. The largest MHSP clinic in Cincinnati saw about 900 Medicare patients in 1990.

Our analysis of the service use patterns of MHSP patients found that about 39 percent of MHSP patients are using the clinics only for such ancillary services as dental care and optometry. Many of these beneficiaries are obtaining physician services from non-MHSP providers and few have had any past encounters with MHSP physicians. Using the MHSP clinics for such ancillary services as dental care while obtaining physician services elsewhere is not prohibited by the demonstration rules. The coverage for a broad array of ancillary services was initially intended, however, to help attract low income beneficiaries to the clinics as their regular source of primary and preventive medical care. The finding that significant numbers of beneficiaries are using the MHSP clinics for dental care and other ancillary services while obtaining physician services only from non-MHSP providers suggests that the demonstration may not be effectively targeted to beneficiaries who do not have access to primary medical care.

Determining the effects of the MHSP Demonstration on service use and Medicare costs is difficult because the demonstration has been operational for over ten years and was not based on a randomized experimental design. We estimated the effects of the demonstration using a quasi-experimental design in which MHSP users were compared with a matched comparison group consisting of beneficiaries selected from the service areas of the MHSP clinics who did not use MHSP services. We estimated that in 1989 the demonstration increased Medicare expenditures by $440 per beneficiary (or 10.4 percent) among users of MHSP physician services and by $500 per beneficiary (or 14.5 percent) among beneficiaries who used MHSP clinics for ancillary services only. These

estimates imply each dollar spent by the Medicare program on MHSP services in 1989 resulted in a net increase in Medicare program expenditures that year of 47 cents.

We evaluated the quality of care delivered by the MHSP clinics by reviewing the medical records of a sample of MHSP patients. We found one or more quality of care problems in 37 percent of the cases reviewed. However, no major problems were found which had observable, significant adverse impacts on patients. A significantly higher rate of quality of care problems was found among MHSP patients than among a national sample of Medicare HMO enrollees whose care was reviewed using the same criteria.

Finally, using data from MHSP cost reports from previous years, we projected future Medicare MHSP costs through the end of the demonstration. We projected that total Medicare costs for MHSP services provided in 1993 will be $46.148 million. Applying our estimates from the cost-effectiveness analysis to this projection, we estimate that the MHSP Demonstration will result in a net increase in total Medicare expenditures in 1993 of $21.690 million.

B. IMPLICATIONS

The MHSP Demonstration was originally intended to improve access to preventive and primary medical care to inner city residents of all ages. In the initial years of the program, emphasis was placed on providing care to children. The conversion of program to a Medicare-only demonstration, and the emergence of some large MHSP clinics which specialize in treating the Medicare population, indicate that the original objectives of the program are not being met entirely. Even among the Medicare population, MHSP services do not appear to be effectively targeted in all cities to beneficiaries in greatest financial need or to those with limited access to primary care providers. Nearly 40 percent of Medicare MHSP patients use the MHSP only for such ancillary services as dental care; most of these beneficiaries have no relationship with MHSP physicians, but instead obtain physician services from non-MHSP providers. Even among beneficiaries who use MHSP physician services, the demonstration has no mechanism to target MHSP services to those in financial

need. The targeting of services could be improved by applying an income screen to limit full MHSP benefits to Medicare beneficiaries with incomes below a specified level. Beneficiaries with incomes above that level could continue to use selected MHSP services but face copayments that increase with income on a sliding-scale basis.

Another limitation of the demonstration is the lack of rationale for the services covered. The range of MHSP services offered varies across cities because the demonstration has allowed the cities wide latitude to determine which services to offer. In addition to primary and preventive care, the MHSP clinics offer a full range of additional services, including prescription drugs, dental care, dentures, optometry services, eyeglasses, and podiatry services. It would be worthwhile to consider whether all of these services should continue to be covered, and if so, whether coverage for some services should be limited to beneficiaries with incomes below a specified level. The significant variation across cities in the scale of the demonstration is another issue that deserves attention.

HCFA currently has limited ability to monitor the services provided under the demonstration because of the limited information required on MHSP claims. Pharmacy and dental services currently constitute over 60 percent of all MHSP costs, yet HCFA has no information on the types of services being provided because for ancillary services the only information contained on MHSP claims is the total charge in dollars. Even with physician services, the claims do not distinguish primary care from preventive care or indicate the types of services provided. The claims processing system for the demonstration should therefore be modified to provide HCFA with more information on the services being provided.

Some of the original objectives of the MHSP Demonstration have been implemented nationwide in the recently enacted Federally Qualified Health Center (FQHC) Program, mandated by the Omnibus Budget Reconciliation Acts of 1989 and 1990. Health centers participating in this program are reimbursed on a reasonable cost basis for services provided to Medicare and Medicaid beneficiaries. Medicare beneficiaries can receive primary and preventive health services from FQHC

centers, with no deductible and with copayments set on a sliding-scale basis. The range of services covered by Medicare under the FQHC program is narrower than that covered under the MHSP Demonstration. For example, prescription drugs and dental care, which account for about 62 percent of all Medicare costs under the MHSP Demonstration, are not covered by Medicare under the FQHC program. Federally funded community health centers (CHCs) are automatically eligible to participate in the FQHC program; eligibility is also extended to other health centers in medically underserved areas. If the MHSP Demonstration is ended, virtually all of the MHSP clinics would qualify for participation in the FQHC Program.

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APPENDIX A

SUPPLEMENTARY TABLES FOR CHAPTER III

TABLE A.1

COMPARISON OF BENEFICIARIES WHO USED THE MHSP
FOR ANCILLARY SERVICES ONLY WITH ALL OTHER MHSP PATIENTS,
BY CITY 1989

	Baltimore		Cincinnati		Milwaukee		San Jose	
	Users of the MHSP in 1989 for Ancillary Services Only	All Other MHSP Patients in 1989	Users of the MHSP in 1989 for Ancillary Services Only	All Other MHSP Patients in 1989	Users of the MHSP in 1989 for Ancillary Services Only	All Other MHSP Patients in 1989	Users of the MHSP in 1989 for Ancillary Services Only	All Other MHSP Patients in 1989
Mean Medicare Cost in 1989								
Total	$4,277	$4,740	$3,256	$3,573	$3,255	84,248	$3,860	$5,034
MHSP services	499	1,325	293	857	412	1,243	483	1,461
Non-MHSP services	3,778	3,415	2,963	2,716	2,843	3,005	3,377	3,573
Mean MHSP cost in 1989, by type of service								
Routine services	0	236	0	320	0	247	0	447
Laboratory	1	68	1	75	0	110	2	125
Radiology	2	21	11	15	0	71	1	48
Pharmacy	23	640	2	289	9	514	11	519
Podiatry	51	89	9	6	1	8	11	23
Dental	390	189	244	90	288	118	401	230
Optometry	16	21	14	8	67	37	38	34
Eyeglasses	13	12	3	2	14	7	14	12
Ail other	3	48	9	52	33	132	5	24
Mean non-MHSP cost in 1989, by type of service								
Part A	2,371	2,221	1,933	1,846	1,661	1,916	1,939	2,283
Inpatient	2,196	2,076	1,871	1,743	1,485	1,697	1,801	2,098
SNF	37	22	0	50	56	32	45	75
Home health	102	99	51	30	41	69	71	96
Part B	1,407	1,194	1,030	870	1,182	1,089	1,438	1,290
Physician/other suppliers	1,044	899	789	670	771	731	1,112	962
Outpatient hospital	362	295	241	201	411	358	324	324
Percent who exceeded the Part B deductible in 1989 (non-MHSP services)	85.1	75.2	84.5	71.5	83.5	77.4	85.1	79.0

TABLE A.1 (continued)

	Baltimore		Cincinnati		Milwaukee		San Jose	
	Users of the MHSP in 1989 for Ancillary Services Only	All Other MHSP Patients in 1989	Users of the MHSP in 1989 for Ancillary Services Only	All Other MHSP Patients in 1989	Users of the MHSP in 1989 for Ancillary Services Only	All Other MHSP Patients in 1989	Users of the MHSP in 1989 for Ancillary Services Only	All Other MHSP Patients in 1989
Percent with an MHSP routine visit in previous years								
1987	9.5	71.7	9.0	78.9	7.0	72.3	10.4	71.9
1988	9.2	81.0	8.0	84.4	6.8	81.6	11.5	82.4
1987 or 1988	13.9	83.4	12.3	88.2	9.8	85.9	15.7	84.9
Percent who used MHSP ancillary services in previous years								
1987	43.8	83.0	32.0	80.8	40.1	74.5	48.4	76.9
1988	54.5	91.3	50.5	88.6	51.3	83.2	63.7	86.4
1987 or 1988	63.8	93.4	53.8	91.4	60.9	85.5	69.1	88.5

TABLE A.2

PERCENTAGE DISTRIBUTION OF THE NUMBER OF MHSP PHARMACY CLAIMS IN 1989

Number of MHSP Pharmacy Claims	All MHSP Users in 1989	Users of MHSP Physician Services in 1989	Users of the MHSP in 1989 for Ancillary Services Only
All Cities			
0	38.8	12.7	79.7
1	8.0	6.5	10.5
2	4.8	5.1	4.5
3 - 5	10.1	14.1	3.8
6 - 10	14.0	22.2	1.0
11 - 15	11.5	18.7	0.3
16 - 20	5.9	9.6	0.1
over 20	6.9	11.2	0.2
Baltimore			
0	36.4	13.7	74.2
1	8.7	6.3	12.8
2	5.3	4.9	6.0
3 - 5	9.9	12.9	4.9
6 - 10	12.1	18.5	1.3
11 - 15	11.6	18.3	0.4
16 - 20	7.1	11.2	0.2
over 20	8.9	14.1	0.3
Cincinnati			
0	30.6	6.2	85.8
1	8.0	7.6	8.8
2	6.5	8.0	3.3
3 - 5	14.2	19.6	2.0
6 - 10	19.5	28.0	0.3
11 - 15	19.2	27.7	0.0
16 - 20	1.8	2.6	0.0
over 20	0.2	0.3	0.0
Milwaukee			
0	54.8	16.0	92.6
1	4.1	5.0	3.2
2	2.3	3.2	1.3
	5.9	10.3	1.7
3-5 6 - 10	12.5	24.6	0.7
11 - 15	8.8	17.4	0.4
16 - 20	5.6	11.3	0.1
over 20	6.1	12.3	0.0

TABLE A.2 ***(continued)*** 4

Number of MHSP Pharmacy Claims	All MHSP Users in 1989	Users of MHSP Physician Services in 1989	Users of the MHSP in 1989 for Ancillary Services Only
San Jose			
0	35.8	9.4	81.5
1	9.1	7.7	11.5
2	5.0	5.9	3.4
3 - 5	12.7	18.3	2.9
6 - 10	19.3	30.2	0.6
11 - 15	11.4	18.0	0.1
16 - 20	3.6	5.6	0.0
over 20	3.1	4.9	0.0

TABLE A.3

MEAN NUMBER OF MHSP PHARMACY CLAIMS
PER BENEFICIARY AND MEAN COST PER CLAIM, 1989

	All MHSP Users in 1989	Users of MHSP Physician Services in 1989	Users of the MHSP in 1989 for Ancillary Services Only
Mean number of MHSP pharmacy claims			
All cities	6.2	9.8	0.5
Baltimore	6.9	10.6	0.7
Cincinnati	5.1	7.2	0.2
Milwaukee	5.2	10.3	0.2
San Jose	5.1	7.9	0.3
Mean cost per MHSP pharmacy claim (dollars)			
All cities	58	59	33
Baltimore	59	60	33
Cincinnati	40	40	9
Milwaukee	50	50	37
San Jose	65	66	31

TABLE A.4

PERCENT DISTRIBUTION OF BALTIMORE
MHSP USERS BY ZIP CODE, 1989

	All MHSP Users in 1989	Users of MHSP Physician Services in 1989	User of the MHSP in 1989 for Ancillary Services Only
21201	3.6	3.4	4.0
21202	1.7	1.3	2.4
21205	5.0	5.6	3.9
21207	2.1	1.8	2.6
21211	1.6	1.2	2.3
21212	1.4	1.1	1.9
21213	13.6	14.5	12.2
21214	2.9	2.7	3.2
21215	6.6	5.7	8.1
21216	9.7	8.8	11.3
21217	8.5	7.2	10.7
21218	4.9	4.4	5.7
21223	6.1	6.2	5.9
21224	14.8	17.5	10.3
21229	4.6	4.6	4.4
21230	5.0	5.7	3.8
21231	3.8	4.1	3.3
21239	1.5	1.4	1.8
Other	2.6	2.8	2.2

NOTE: Only zip codes which contained at least 1 percent of all MHSP users in the city in 1989 are shown.

TABLE A.5

PERCENT DISTRIBUTION OF CINCINNATI
MHSP USERS BY ZIP CODE, 1989

	All MHSP Users in 1989	Users of MHSP Physician Services in 1989	User of the MHSP in 1989 for Ancillary Services Onlv
45205	1.9	1.3	3.2
45206	5.0	4.2	6.7
45207	2.9	2.8	3.2
45208	1.0	1.3	0.2
45209	3.2	3.9	1.8
45211	1.9	2.1	1.5
45212	1.2	1.0	1.5
45213	1.8	1.7	2.2
45214	1.8	1.8	2.0
45215	1.5	1.7	1.3
45216	1.3	1.0	2.0
45217	1.4	1.7	0.8
45219	1.5	1.4	1.5
45220	3.2	3.1	3.5
45223	11.5	12.0	10.5
45224	10.4	9.1	13.5
45225	5.1	5.6	3.7
45227	14.0	17.7	5.7
45229	5.8	5.0	7.7
4523 1	3.2	3.3	3.0
45232	2.7	3.5	0.8
45237	6.6	5.5	9.0
45239	1.2	1.1	1.3
Other	9.9	8.2	13.4

NOTE: Only zip codes which contained at least 1 percent of all MHSP users in the city in 1989 are shown.

TABLE A.6

PERCENT DISTRIBUTION OF MILWAUKEE
MHSP USERS BY ZIP CODE, 1989

	All MHSP Users in 1989	Users of MHSP Physician Services in 1989	User of the MHSB in 1989 for Ancillary Services Only
53202	2.0	1.2	2.8
53204	7.5	9.1	6.0
53205	3.7	4.1	3.3
53206	13.5	17.7	9.4
53207	9.4	6.9	11.9
53208	2.9	2.7	3.2
53209	5.3	5.5	5.1
53210	2.6	2.8	2.4
53212	9.5	11.0	8.1
53215	16.0	15.7	16.4
53216	3.9	4.1	3.7
53218	2.0	1.5	2.4
53219	4.4	3.7	5.0
53220	1.7	1.6	1.8
53221	7.6	6.1	9.1
53223	1.0	0.9	1.0
53225	1.1	0.7	1.5
53233	13	1.5	1.1
Other	4.6	3.2	5.8

No-m Only zip codes which contained at least 1 percent of all MHSP users in the city in 1989 are shown.

TABLE A.7

PERCENT DISTRIBUTION OF SAN JOSE
MHSP USERS BY ZIP CODE, 1989

	All MHSP Users in 1989	Users of MHSP Physician Services in 1989	User of the MHSP in 1989 for Ancillary Services Only
95110	3.1	3.4	2.6
95111	7.3	8.8	4.7
95112	13.4	14.3	11.8
95113	1.1	1.1	1.2
95116	8.4	9.5	6.5
95117	2.4	2.0	2.9
95118	2.7	2.3	3.2
95120	1.1	0.8	1.7
95121	2.4	2.4	2.5
95122	3.2	3.8	2.2
95123	4.1	3.9	4.6
95124	3.5	3.0	4.4
95125	13.0	12.0	14.8
95126	3.9	3.6	4.4
95127	8.4	8.6	8.1
95128	3.7	2.7	5.6
95129	1.1	1.0	1.3
95132	1.4	1.6	0.9
95133	1.4	1.4	1.4
95136	4.0	4.5	3.1
95148	1.2	1.2	1.3
Other	9.2	8.1	10.8

NOTE: Only zip codes which contained at least 1 percent of all **MHSP** users in the city in **1989** are shown.

TABLE A.8

UNADJUSTED DIFFERENCES IN MEAN MEDICARE EXPENDITURES AND HOSPITAL ADMISSION RATES BETWEEN USERS OF MHSP PHYSICIAN SERVICES AND MHSP NONUSERS WHO HAD POSITIVE MEDICARE PAYMENTS, 1989

	Unadjusted Mean Medicare Expenditure in 1989		
	Users of MHSP Physician Services	MHSP Nonusers with Positive Medicare Payments	User-Nonuser Difference
All Cities			
Total	$4,664	$5,159	-$495 **
Total Part A	2,172	3,530	-1,358 **
Inpatient hospital	2,012	3,185	-1,173 **
SNF/home health	126	268	-142 **
Other	34	77	-43 **
Total Part B	2,492	1,629	863 **
Non-MHSP physicians and suppliers	876	1,244	-368 **
Hospital OPD/ER	303	385	-82 **
MHSP	1,313	0	1,313 **
Hospital admissions per 1,000 beneficiaries	338	490	-152 **
Baltimore			
Total	4,740	5,863	-1,123 **
Total Part A	2,221	4,112	-1,891 **
Inpatient hospital	2,076	3,754	-1,678 **
SNF/home health	121	290	-169 **
Other	24	68	-44 **
Total Part B	2,519	1,751	-768 **
Non-MHSP physicians and suppliers	899	1,354	-455 **
Hospital OPD/ER	295	397	-102 **
MHSP	1,325	0	1,325 **
Hospital admissions per 1,000 beneficiaries	361	555	-194 **
Cincinnati			
Total	3,573	4,536	-963 **
Total Part A	1,846	3,063	-1,217 **
Inpatient hospital	1,743	2,787	-1,044 **
SNF/home health	80	218	-138 **
Other	23	58	-35

TABLE A.8 (continued)

	Unadjusted Mean Medicare Expenditure in 1989		
	Users of MHSP Physician Services	MHSP Nonusers with Positive Medicare Payments	User-Nonuser Difference
Total Part B	1,728	1,474	254 **
Non-MHSP physicians and suppliers	670	1,120	-450 **
Hospital OPD/ER	201	354	-153 **
MHSP	857	0	857 **
Hospital admissions per 1,000 beneficiaries	322	456	-134 **
Milwaukee			
Total	4,251	3,974	277
Total Part A	1,917	2,607	-690 **
Inpatient hospital	1,698	2,255	-557 **
SNF/home health	101	191	-90 *
Other	118	161	-43
Total Part B	2,333	1,366	967 **
Non-MHSP physicians and suppliers	731	943	-212 **
Hospital OPD/ER	359	423	64 *
MHSP	1,243	0	1,243 **
Hospital admissions per 1,000 beneficiaries	325	439	-114 **
San Jose			
Total	5,034	4,409	625 **
Total Part A	2,283	2,832	-549 **
Inpatient hospital	2,098	2,518	-420 **
SNF/home health	171	294	-123 **
Other	14	20	-6
Total Part B	2,747	1,576	1,171 **
Non-MHSP physicians and suppliers	962	1,257	-295 **
Hospital OPD/ER	324	319	5
MHSP	1,461	0	1,461 **
Hospital admissions per 1,000 beneficiaries	282	389	-107 **

NOTE: The two samples used in this analysis are MHSP users who received MHSP physician services in 1989 and MHSP nonusers who had positive Medicare payments in 1989.

*Significantly different from zero at the .05 level, two-tailed test.

**Significantly different from zero at the .01 level, two-tailed test.

TABLE A.9

UNADJUSTED DIFFERENCES IN MEAN MEDICARE EXPENDITURES AND HOSPITAL ADMISSION RATES BETWEEN USERS OF THE MHSP FOR ANCILLARY SERVICES ONLY AND MHSP NONUSERS

	Unadjusted Mean Medicare Expenditures in 1989		
	Users of the MHSP in 1989 for Ancillary Services Only	MHSP Nonusers	User-Nonuser Difference
All Cities			
Total expenditure	$3,951	$4,029	-$78
Part A expenditure	2,131	2,757	-626 **
Inpatient hospital	1,967	2,488	-521 **
SNF/home health	123	209	-86 **
Other	41	60	-19 *
Part B expenditure	1,819	1,273	546 **
Non-MI-ISP physicians and suppliers	990	972	18
Hospital OPD/ER	360	301	59 **
MHSP	469	0	469
Hospital admissions per 1,000 beneficiaries	338	382	-44 **
Baltimore			
Total expenditure	4,277	4,484	-207
Part A expenditure	2,371	3,145	-774 **
Inpatient hospital	2,196	2,871	-675 **
SNF/home health	139	222	-83 *
Other	36	52	-16
Part B expenditure	1,905	1,339	566 **
Non-MHSP physicians and suppliers	1,044	1,035	9
Hospital OPD/ER	362	304	58 **
MHSP	499	0	499 **
Hospital admissions per 1,000 beneficiaries	388	425	-37 *
Cincinnati			
Total expenditure	3,256	3,642	-386
Part A expenditure	1,933	2,459	-526
Inpatient hospital	1,871	2,238	-367
SNF/home health	51	175	-124
Other	11	46	-35

TABLE A.9 (continued)

	Unadjusted Mean Medicare Expenditures in 1989		
	Users of the MHSP in 1989 for Ancillary Services Only	MHSP Nonusers	User-Nonuser Difference
Part B expenditure	1,323	1,183	140
Non-MHSP physicians and suppliers	789	899	-110
Hospital OPD/ER	241	284	-43
MHSP	293	0	293
Hospital admissions per 1,000 beneficiaries	355	366	-11
Milwaukee			
Total expenditure	3,255	3,167	88
Part A expenditure	1,661	2,078	-417 **
Inpatient hospital	1,485	1,797	-312 *
SNF/home health	97	152	-55
Other	79	129	-50
Part B expenditure	1,594	1,089	505 **
Non-MHSP physicians and suppliers	771	752	19
Hospital OPD/ER	411	337	74 *
MHSP	412	0	412 **
Hospital admissions per 1,000 beneficiaries	338	382	-44 **
San Jose			
Total expenditure	3,862	3,573	289
Part A expenditure	1,940	2,295	-355 *
Inpatient hospital	1,802	2,041	-239
SNF/home health	115	238	-123
Other	23	16	7
Part B expenditure	1,920	1,278	642 **
Non-MHSP physicians and suppliers	1,112	1,019	93
Hospital OPD/ER	325	259	66 *
MHSP	483	0	483 **
Hospital admissions per 1,000 beneficiaries	226	283	-57 **

*Significantly different from zero at the .05 level, two-tailed test.

**Significantly different from zero at the .01 level, two-tailed test.

TABLE **A 1 0**

REGRESSION RESULTS FROM MODELS TO ESTIMATE THE EFFECT OF THE MHSP ON MEDICARE EXPENDITURES FOR BENEFICIARIES WHO USED MHSP PHYSICIAN SERVICES, 1989

Independent Variables	Total Expenditures	Part A Expenditures	Total Part B Expenditures (Includes MHSP Costs)	Non-MHSP Part B Expenditures
Intercept	2829 (14.82)	1577 (9.86)	1252 (26.52)	1232 (27.14)
MHSP User	440 (4.05)	-583 (-6.40)	1023 (38.08)	-281 (-10.86)
Age < 65	430 (2.08)	309 (1.78)	121 (2.36)	73 (1.48)
Age 70 - 74	209 (1.31)	127 (0.95)	83 (2.09)	60 (1.57)
Age 75 - 79	(2446:)	312 (2.22)	135 (3.27)	114 (2.86)
Age 80 - 84	708 (3.77)	610 (3.88)	98 (2.12)	90 (2.02)
Age 85 and over	202 (1.00)	259 (1.53)	-57 (-1.14)	-58 (-1.20)
Female	-739 (-7.10)	-605 (-6.94)	-133 (-5.19)	-149 (-6.02)
Medicaid Buy-in	1410 (10.14)	1077 (9.24)	333 (9.69)	386 (11.67)
Race Black	198 (1.76)	259 (2.75)	-61 (-2.20)	-2 (-0.09)
Race Other	-220 (-0.68)	-30 (-0.11)	-190 (-2.37)	-166 (-2.15)
Race unknown	-729 (-1.31)	-546 (-1.17)	-183 (-1.33)	-92 (-0.69)
Died in 1989	11628 (54.42)	10232 (57.14)	1396 (26.42)	1488 (29.28)
Originally Entitled Due to Disability	1228 (6.80)	(5%)	462 (10.33)	340 (7.91)
Baltimore Resident	535 (3.64)	537 (4.36)	-2 (-0.06)	23 (0.67)
Cincinnati Resident	-475 (-1.99)	-73 (-0.37)	-402 (-6.79)	-223 (-3.91)

TABLE A.10 (continued)

Independent Variables	Total Expenditures	Part A Expenditures	Total Part B Expenditures (Includes MHSP Costs)	Non-MHSP Part B Expenditures
Milwaukee Resident	-644 (-3.71)	-351 (-2.41)	-293 (-6.84)	-238 (-5.76)
Used Home Health Services in 1988	2024 (8.42)	1422 (7.06)	602 (10.13)	519 (9.07)
Used Home Health Services in 1987 and 1988	2043 (4.80)	1873 (5.25)	170 (1.62)	191 (1.89)
Hospitalized Two or More Times During 1987-88	4732 (31.56)	3246 (25.83)	1486 (40.07)	1378 (38.63)
R^2	0.12	0.12	0.10	0.09

NOTE: Total Part B expenditures include expenditures for non-MHSP Part B services and MHSP services. t-statistics are in parentheses.

TABLE A.11

REGRESSION RESULTS FROM MODELS TO ESTIMATE
THE EFFECT OF THE MHSP ON MEDICARE EXPENDITURES
AND HOSPITAL ADMISSIONS FOR BENEFICIARIES
WHO USED MHSP PHYSICIAN SERVICES

	Medicare Expenditures					
Independent Variables	Non-MHSP Physicians and Suppliers	Hospital OPD/ER	Inpatient Hospital	SNF	Home Health	Hospital Admissions
Intercept	931 (27.53)	300 (14.26)	1555 (10.33)	(0.028)	40 (3.55)	0.190 (11.36)
MHSP User	-236 (-12.29)	-45 (-3.77)	-483 (-5.63)	-62 (-5.37)	-17 (-2.70)	-0.060 (-6.25)
Age < 65	-36 (-0.98)	110 (4.80)	119 (0.73)	-29 (-1.33)	20 (1.60)	0.085 (4.67)
Age 70 - 74	66 (2.31)	-5 (-0.29)	75 (0.60)	30 (1.76)	16 (1.74)	0.025 (1.81)
Age 75 - 79	129 (4.36)	-15 (-0.81)	190 (1.44)	81 (4.53)	32 (3.18)	0.043 (2.94)
Age 80 - 84	148 (4.45)	-57 (-2.76)	422 (2.85)	118 (5.91)	53 (4.78)	0.067 (4.08)
Age 85 and over	73 (2.04)	-130 (-5.83)	13 (0.08)	196 (9.07)	49 (4.08)	0.084 (4.74)
Female	-127 (-6.89)	-22 (-1.91)	-628 (-7.66)	13 (1.15)	(0.329)	-0.079 (-8.67)
Medicaid Buy-in	292 (11.86)	92 (6.03)	922 (8.41)	166 (11.18)	-20 (-2.47)	0.105 (8.63)
Race Black	-48 (-2.40)	46 (3.68)	206 (2.32)	-14 (-1.19)	37 (5.57)	0.021 (2.18)
Race Other	-120 (-2.09)	-46 (-1.29)	-19 (-0.07)	-41 (-1.18)	-5 (-0.26)	-0.020 (-0.70)
Race Unknown	-95 (-0.97)	4 (0.07)	-453 (-1.03)	-72 (-1.22)	-34 (-1.03)	-0.024 (-0.50)
Died in 1989	1450 (38.32)	37 (1.58)	9803 (58.15)	313 (13.72)	102 (8.10)	0.901 (48.10)
Originally Entitled Due to Disability	268 (8.36)	73 (3.67)	685 (4.81)	6 (0.30)	62 (5.81)	0.117 (7.39)
Baltimore Resident	29 (1.10)	-4 (-0.28)	542 (4.67)	-19 (-1.19)	-3 (-0.37)	0.127 (9.83)

TABLE A.11 (continued)

Independent Variables	Medicare Expenditures					
	Non-MHSP Physicians and Suppliers	Hospital OPD/ER	Inpatient Hospital	SNF	Home Health	Hospital Admissions
Cincinnati Resident	-156 (-3.68)	-65 (-2.47)	-13 (-0.07)	**27** **(1.06)**	-87 (-6.14)	0.067 (3.19)
Milwaukee Resident	-273 (-8.89)	**36** **(1.89)**	-383 (-2.80)	-14 (-0.77)	-57 (-5.59)	0.060 (3.96)
Used Home Health Services in 1988	435 (10.22)	**84** **(3.17)**	1109 (5.85)	-66 (-2.58)	358 (25.14)	0.196 (9.32)
Used Home Health Services in 1987 and 1988	289 (3.83)	-97 (-2.07)	1358 (4.04)	**88** **(1.94)**	439 (17.42)	0.126 (3.37)
Hospitalized Two or More Times During 1987-88	**996** (37.48)	382 (23.13)	2868 (24.24)	227 (14.17)	**82** **(9.23)**	0.547 (41.57)
R^2	0.11	0.02	0.11	0.02	0.06	0.13

NOTE: t-statistics are in parentheses.

TABLE A12

REGRESSION RESULTS FROM MODELS TO ESTIMATE THE EFFECT OF THE MHSP ON MEDICARE EXPENDITURES FOR BENEFICIARIES WHO USED THE MHSP FOR ANCILLARY SERVICES ONLY

Independent Variables	Total Expenditures	Part A Expenditures	Total Part B Expenditures (Includes MHSP Costs)	Non-MHSP Part B Expenditures
Intercept	1763 (10.69)	**952** **(6.90)**	811 (19.83)	801 (19.72)
MHSP User	**500** **(4.35)**	-137 (-1.42)	636 (22.35)	168 (5.93)
Age < 65	143 (0.82)	140 (0.97)	**3** **(0.06)**	**10** **(0.24)**
Age 70 - 74	308 (2.20)	205 (1.75)	103 (2.97)	105 (3.05)
Age 75 - 79	418 (2.81)	282 (2.27)	136 (3.69)	147 **(4.00)**
Age 80 - 84	676 (4.02)	571 (4.06)	105 (2.52)	119 (2.87)
Age 85 and over	265 (1.47)	276 (1.83)	-11 (-0.25)	**5** **(0.11)**
Female	-364 (-3.91)	-349 (-4.49)	-15 (-0.63)	**-9** **(-0.37)**
Medicaid Buy-in	1590 (12.87)	1109 (10.74)	481 (15.70)	477 (15.66)
Race Black	**288** **(2.82)**	**264** **(3.09)**	**24** **(0.96)**	**17** **(0.69)**
Race Other	-524 (-1.76)	-382 (-1.53)	-142 (-1.92)	-167 (-2.28)
Race Unknown	-455 (-0.96)	-349 (-0.88)	-106 (-0.90)	-114 (-0.97)
Died in 1989	11231 (56.64)	9728 (58.70)	1503 (30.59)	1517 (31.07)
Originally Entitled Due to Disability	1001 **(6.06)**	673 (4.88)	327 (7.99)	326 **(8.00)**
Milwaukee Resident	375 (2.77)	408 (3.60)	-33 (-0.98)	-34 (-1.01)
Cincinnati Resident	**-284** **(-1.28)**	-74 (-0.40)	-211 (-3.81)	-182 (-3.31)

TABLE A.12 (continued)

Independent Variables	Total Expenditures	Part A Expenditures	Total Part B Expenditures (Includes MHSP Costs)	Non-MHSP Part B Expenditures
Baltimore Resident	-513 (-3.36)	-283 (-2.22)	-230 (-6.08)	-216 (-5.74)
Used Home Health Services in 1988	1814 (7.84)	1187 (6.14)	627 (10.94)	620 (10.88)
Used Home Health Services in 1987 and 1988	2450 (5.93)	2191 (6.34)	259 (2.53)	248 (2.43)
Hospitalized Two or More Times During 1987-88	5397 (38.31)	3758 (31.92)	1639 (46.94)	1634 (47.10)
R^2	0.13	0.12	0.11	0.10

NOTES: Total Part B expenditures include expenditures for non-MHSP Part B services and MHSP services. t-statistics are in parentheses.

TABLE A.13

REGRESSION RESULTS FROM MODELS TO ESTIMATE THE EFFECT OF THE MHSP ON MEDICARE EXPENDITURES AND HOSPITAL ADMISSIONS FOR BENEFICIARIES WHO USED THE MHSP FOR ANCILLARY SERVICES ONLY

	Medicare Exvenditures					
Independent Variables	Hospital OPD/ER	Non-MHSP Physicians and Suppliers	Inpatient Hospital	SNF	Home Health	Hospital Admissions
Intercept	164 (8.58)	637 (21.33)	961 (7.42)	-11 (-0.63)	20 (2.05)	0.096 (6.61)
MHSP User	67 (5.05)	100 (4.79)	-76 (-0.84)	-46 (-3.69)	-4 (-0.60)	0.006 (0.56)
Age < 65	89 (4.44)	-79 (-2.52)	-18 (-0.13)	-25 (-1.31)	22 (2.13)	0.059 (3.86)
Age 70 - 74	10 (0.64)	(3.79:)	1.58 (1.44)	28 (1.82)	14 (1.63)	0.040 (3.27)
Age 75 - 79	1 (0.07)	145 (5.39)	177 (1.51)	82 (5.07)	24 (2.74)	0.040 (3.07)
Age 80 - 84	-41 (-2.08)	160 (5.24)	407 (3.08)	120 (6.57)	40 (4.04)	0.069 (4.69)
Age 85 and over	-97 (-4.65)	102 (3.13)	62 (0.44)	175 (8.90)	37 (3.44)	0,090 (5.68)
Female	19 (1.77)	-28 (-1.65)	-372 (-5.09)	11 (1.07)	10 (1.87)	-0.035 (-4.33)
Medicaid Buy-in	125 (8.69)	351 (15.70)	940 (9.69)	150 (11.20)	-9 (-1.20)	0.113 (10.44)
Race Black	52 (4.38)	-34 (-1.86)	231 (2.89)	-8 (-0.71)	23 (3.82)	0.025 (2.75)
Race Other	-18 (-05 1)	-150 (-2.77)	-375 (-1.60)	-35 (-1.09)	-9 (-0.52)	-0.040 (-1.53)
Race unknown	-18 (-0.32)	-96 (-1.12)	-279 (-0.75)	-62 (-1.20)	-15 (-0.52)	-0.021 (-0.51)
Died in 1989	63 (2.76)	1453 (40.50)	9288 (59.61)	299 (13.89)	107 (9.11)	0.850 (48.84)
Originally Entitled Due to Disability	86 (4.50)	240 (8.01)	607 (4.68)	8 (0.47)	56 (5.67)	0.103 (7.11)
Baltimore Resident	-7 (-0.43)	-27 (-1.09)	405 (3.81)	-17 (-1.18)	2 (0.22)	0.103 (8.63)

TABLE A.13 (continued)

Independent Variables	Medicare Expenditures: Hospital OPD/ER	Non-MHSP Physicians and Suppliers	Inpatient Hospital	SNF	Home Health	Hospital Admissions
Cincinnati Resident	-37 (-1.43)	-144 (-3.56)	-30 (-0.17)	15 (0.64)	-65 (-4.91)	0.061 (3.12)
Milwaukee Resident	44 (2.50)	-260 (-9.40)	-315 (-2.63)	-9 (-0.52)	-44 (-4.87)	0.054 (4.03)
Used Home Health Services in 1988	148 (5.52)	473 (11.28)	878 (4.83)	-47 (-1.88)	360 (26.13)	0.181 (8.91)
Used Home Health Services in 1987 and 1988	-89 (-1.86)	337 (4.50)	1695 (5.22)	45 (1.01)	421 (17.14)	0.127 (3.51)
Hospitalized Two or More Times During 1987-88	459 (28.05)	1176 (46.13)	3353 (30.30)	238 (15.53)	92 (10.94)	0.612 (49.46)
R^2	0.03	0.12	0.12	0.02	0.06	0.14

NOTE: t-statistics are in parentheses.

APPENDIX B

SUPPLEMENTARY TABLES FOR CHAPTER V

TABLE B.l

ACTUAL MHSP MEDICARE COSTS FY85-FY90 AND PROJECTED MHSP MEDICARE COSTS FY91-FY93 BALTIMORE

	Actual						Projected		
Service Type	FY85	FY86	FY87	FY88	FY89	FY90**	FY91	FY92	FY93
Routine	$2,228,713	$2,139,850	$2,212,901	$2,991,654	$2,744,748	$2,630,787	$2,951,824	$3,083,362	$3,214,899
Physical Therapy	0	0	0	47,874	102,405	107,464	112,837	120,897	124,443
Radiology	145,446	198,866	199,663	310,525	291,117	268,349	335,874	364,506	393,139
Laboratory	682,935	514,256	705,204	857,772	1,096,874	1,507,235	1,496,238	1,668,293	1,840,348
Pharmacy	1,944,654	2,807,590	4,314,495	6,001,032	7,161,160	8,042,933	9,569,175	10,861,708	12,154,240
Transportation	0	0	1,071	62,589	87,199	144,017	168,867	203,283	237,699
Dental Services	754,246	947,111	1,215,023	1,445,107	5159,796	2,881,957	3,017,876	3,432,353	3,846,830
Audiology	0	0	75,473	131,991	133,597	88,143	117,205	121,167	125,128
Optometry	195,277	251,168	272,347	285,455	284,638	325,075	345,244	367,030	388,816
Podiatry	543,668	970,771	1,264,435	1,165,240	1,277,726	1,758,971	1,853,287	2,050,378	2,247,469
Dentures	1,949,196	2,351,270	2,251,416	2249,973	2,678,619	3,905,346	3640,439	3,947,906	4255,373
Eyeglasses	182,265	245,791	252,003	353,317	317,107	389,394	425,070	463,668	502,265
Psychology	109,061	220,963	322,397	500,634	524,783	679,064	786,788	899,351	1,011,915
Other Services*	0	0	0	0	0	0	0	0	0
Total Ancillary	$6506,748	$8,507,786	$10,873,527	$13,411,509	$16,115,021	$20,097,948	$21,868,900	$24,500,539	$27,127,665
Total Routine and Ancillary	$8,735,461	$10,647,636	$13,086,428	$16,403,163	$18,859,769	$22,728,735	$24,820,724	$27,583,901	$30,342,564

Nom: The fiscal year for Baltimore runs from January 1 through December 31.

*Includes speech therapy, occupational therapy, EKG, and other.
**Cost data for FY 1990 have not been settled.

TABLE B.2

PERCENTAGE DISTRIBUTION OF MHSP MEDICARE COSTS
AND GROWTH RATES IN COSTS BY SERVICE TYPE,
SELECTED YEARS, FY85-FY93 BALTIMORE

	Percentage Distribution			Average Annual Growth Rate	
Service Type	FY85	FY90	FY93	FY85-FY90*	FY90-FY93*
Routine	25.5 %	11.6 %	10.6 %	3.3 %	6.7 %
Physical Therapy	0.0	0.5	0.4	--	4.9
Radiology	1.7	1.2	1.3	12.2	12.7
Laboratory	7.8	6.6	6.1	15.8	6.7
Pharmacy	22.3	35.4	40.1	28.4	13.8
Transportation	0.0	0.6	0.8		16.7
Dental Services	8.6	12.7	12.7	26.8	9.6
Audiology	0.0	0.4	0.4	--	11.7
Optometry	2.2	1.4	1.3	10.2	6.0
Podiatry	6.2	7.7	7.4	23.5	8.2
Dentures	22.3	17.2	14.0	13.9	2.9
Eyeglasses	2.1	1.7	1.7	15.2	8.5
Psychology	1.2	3.0	3.3	36.6	13.3
Other Services	0.0	0.0	0.0	--	--
Total Ancillary	74.5 %	88.4 %	89.4 %	22.6 %	10.0 %
Total Routine and Ancillary	100.0 %	100.0 %	100.0 %	19.1 %	9.6 %

*Growth rates shown are the average annual compounded rate of growth.

TABLE B.3

PROJECTED MHSP MEDICARE COSTS BY SERVICE TYPE COMPARED WITH COSTS IN UNSETTLED COSTS REPORTS, FY91 BALTIMORE

Service Type	1991 Values From Unsettled Cost Reports	1991 Projected	Percentage Difference
Routine	$2,655,407	$2,951,824	10.0 %
Physical Therapy	99,161	112,837	12.1
Radiology	239,121	335,874	28.8
Laboratory	2,000,610	1,496,238	-33.7
Pharmacy	9,135,257	9,569,175	4.5
Transportation	309,806	168,867	-83.5
Dental Services	2,347,243	3,017,876	22.2
Audiology	35,681	117,205	69.6
Optometry	288,265	345,244	16.5
Podiatry	1,782,130	1,853,287	3.8
Dentures	4,150,187	3640,439	-14.0
Eyeglasses	360,044	425,070	15.3
Psychology	749,596	786,788	4.7
Total Ancillary	$21,497,101	$21,868,900	1.7 %
Total Routine and Ancillary	$24,152,508	$24,820,724	2.7 %

TABLE B.4

ACTUAL MHSP MEDICARE COSTS FY85-FY90 AND PROJECTED
MHSP MEDICARE COSTS FY91-FY93 CINCINNATI

	Actual						Projected		
service Type	FY85	FY86	FY87	FY88	FY89	FY90**	FY91	FY92	FY93
Routine	$219,206	$312,962	$258,767	$325,367	$440,793	$394,329	$449,872	5484,348	$518,824
Physical Therapy	0	0	0	0	0	0	0	0	0
Radiology	22,299	21,276	23,876	23,121	13,594	14,650	13,598	11,825	10,053
Laboratory	39,776	41,144	61,593	67,844	84,490	68,476	88,533	96,527	104,520
Pharmacy	206,912	318,054	391,207	471,275	322,578	415,187	421,351	433,915	446,479
Transportation	31,805	42,438	39,342	36,450	71,030	67,364	74,139	81,587	89,035
Dental Services	149,942	156,624	161,512	222,247	241,320	286,480	302,772	331,273	359,773
Audiology	0	0	0	0	0	0	0	0	0
Optometry	6,296	10,341	7,508	10,012	16,894	25,872	24,825	28,255	31,684
Podiatty	2,591	3,461	6,958	9,602	9,986	10,088	12,904	14,532	16,160
Dentures***	0	0	0	0	0	0	0	0	0
Eyeglasses	2,133	2,012	2,919	2,197	5,522	3,578	4,763	5,250	5,737
Psychology	0	0	0	0	0	0	0	0	0
Other Services*	0	0	0	0	0	0	0	0	0
Total Ancillary	$461,754	$595,350	$694,915	3842,748	$765,414	$891,695	$942,886	$1,003,163	$1,063,441
Total Routine and Ancillary	$680,960	$908,312	$953,682	$1,168,115	$1,206,207	$1,286,024	$1,392,757	$1,487,511	$1,582,265

NOTE: The fiscal year for Cincinnati runs from July 1 through June 30.

*Includes speech therapy, occupational therapy, EKG, and other.
"Cost data for FY 1990 have not been settled.
***Denture costs are included in the Dental Services Category.

TABLE B.5

PERCENTAGE DISTRIBUTION OF MHSP MEDICARE COSTS AND GROWTH RATES IN COSTS BY SERVICE TYPE, SELECTED YEARS, FY85-FY93 CINCINNATI

	Percentage Distribution			Average Annual Growth Rate	
Service Type	FY85	FY90	FY93	FY85-FY90*	FY90-FY93*
Routine	32.2 %	30.7 %	32.8 %	11.7 %	9.1 %
Physical Therapy	0.0	0.0	0.0	--	--
Radiology	3.3	1.1	0.6	-8.4	-12.6
Laboratory	5.8	5.3	6.6	10.9	14.1
Pharmacy	30.4	32.3	28.2	13.9	2.4
Transportation	4.7	5.2	5.6	15.0	9.3
Dental Services	22.0	22.3	22.7	12.9	7.6
Audiology	0.0	0.0	0.0	--	--
Optometry	0.9	2.0	2.0	28.3	6.8
Podiatry	0.4	0.8	1.0	27.2	15.7
Dentures	0.0	0.0	0.0	--	--
Eyeglasses	0.3	0.3	0.4	10.3	15.7
Psychology	0.0	0.0	0.0	--	--
Other Services	0.0	0.0	0.0	--	--
Total Ancillary	67.8 %	69.3 %	67.2 %	13.2 %	5.9 %
Total Routine and Ancillary	100.0 %	100.0 %	100.0 %	12.7 %	6.9 %

*Growth rates shown are the average annual compounded rate of growth.

TABLE B.6

ACTUAL MHSP MEDICARE COST8 FY85-FY90 AND PROJECTED
MHSP MEDICARE COSTS FY91-FY93 MILWAUKEE

	Actual						Projected		
Service Type	FY85	FY86	FY87	FY88	FY89	FY90**	FY91	FY92	FY93
Routine	$402,977	$452,462	$511,273	$511,843	$458,586	$636,594	$614,325	$648,240	$682,155
Physical Therapy	101,189	97,919	131,436	118,708	95,832	81,283	92,543	89,156	85,770
Radiology	1,608	35,009	137,679	158,917	146,295	135,305	139,613	137,639	135,664
Laboratory	94,414	168,714	291,604	375,962	308,445	319,125	327,546	329,050	330,555
Pharmacy	786,253	558,746	701,362	936,606	1,045,377	1,273,583	1,296,833	1,414,884	1,532,935
Transportation	81,874	78,268	101,344	135,735	152,151	128,842	154,246	164,137	174,028
Dental Services	332,765	441,068	440,653	526,194	637,829	436,929	553,204	572,094	590,984
Audiology	3,469	4,077	3,377	1,092	1,223	0	0	0	0
Optometry	98,634	128,495	167,903	160,934	234,265	176,953	210,134	220,182	230,230
Podiatry	0	0	8,688	20,533	18,738	23,593	24,274	25,960	27,645
Dentures	143,638	165,012	155,850	202,997	206,602	110,502	164,724	164,902	165,080
Eyeglasses	43,894	48,808	66,673	34,044	49,000	93,377	77,502	83,655	89,809
Psychology	0	977	14,519	38,200	37,330	6,439	6,440	6,440	6,440
Other Services*	14,323	17,216	24,289	39,726	34,935	31,534	36,857	38,551	40,246
Total Ancillary	$1,702,061	$1,744,309	$2,245,377	$2,749,648	$2,968,022	$2,817,465	$3,083,915	$3,246,650	$3,409,385
Total Routine and Ancillary	$2,105,038	$2,196,771	$2,756,650	$3,261,491	$3,426,608	$3,454,059	$3,698,240	$3,894,890	$4,091,541

NOTE: The fiscal year for Milwaukee runs from January 1 through December 31.

*Includes speech therapy, occupational therapy, EKG, and other.
**Cost data for FY 1990 have not been settled.

TABLE B.7

PERCENTAGE DISTRIBUTION OF MHSP MEDICARE COSTS AND GROWTH RATES IN COSTS BY SERVICE TYPE, SELECTED YEARS, FY85-FY93 MILWAUKEE

Service Type	Percentage Distribution			Average Annual Growth Rate	
	FY85	FY90	FY93	FY85-FY90*	FY90-FY93*
Routine	19.1 %	18.4 %	16.7 %	9.1 %	2.3 %
Physical Therapy	4.8	2.4	2.1	-4.4	1.8
Radiology	0.1	3.9	3.3	88.7	0.1
Laboratory	4.5	9.2	8.1	24.4	1.2
Pharmacy	37.4	36.9	37.5	9.6	6.2
Transportation	3.9	3.7	4.3	9.1	10.0
Dental Services	15.8	12.6	14.4	5.4	10.1
Audiology	0.2	0.0	0.0	--	--
Optometry	4.7	5.1	5.6	11.7	8.8
Podiatry	0.0	0.7	0.7	--	5.3
Dentures	6.8	3.2	4.0	-5.2	13.4
Eyeglasses	2.1	2.7	2.2	15.1	-1.3
Psychology	0.0	0.2	0.2	--	0.0
Other Services	0.7	0.9	1.0	15.8	8.1
Total Ancillary	80.9 %	81.6 %	83.3 %	10.1 %	6.4 %
Total Routine and Ancillary	100.0 %	100.0 %	100.0 %	9.9 %	5.6 %

*Growth rates shown are the average annual compounded rate of growth.

TABLE B.8

ACTUAL MHSP MEDICARE COSTS FY85-FY90 AND PROJECTED
MHSP MEDICARE COSTS FY91-FY93 SAN JOSE

	Actual						Projected		
Service Type	FY85	FY86	FY87	FY88	FY89	FY90	FY91	FY92	FY93
Routine	$793,407	$1,007,633	$1,177,361	$1,524,391	1,776,118	$1,707,579	$2,053,416	$2,259,797	$2,466,179
Physical Therapy	0	0	0	0	0	0	0	0	0
Radiology	73,788	83,424	79,838	199,144	188,837	224,906	260,770	294,802	328,835
Laboratory	317,022	301,145	340,682	445,723	403,387	471,461	498,300	532,127	565,955
Pharmacy	780,313	927,462	1,097,476	1,633,413	1,722,676	2,217,617	2,407,303	2,696,106	2,984,908
Transportation	32,369	36,023	55,125	76,065	93,228	94,202	114,674	129,009	143,344
Dental Services	796,513	1,014,043	1,135,221	1,402,796	1,728,952	1,867,936	2,101,185	5323,169	2,545,152
Audiology	0	0	0	0	0	0	0	0	0
Optometry	70,370	82,601	91,813	161,402	199,461	214,641	250,867	283,482	316,097
Podiatry	21,066	32,133	35,390	65,641	78,138	93,525	107,372	122,530	137,689
Dentures	76,946	64,930	84,785	123,780	293,987	359,440	381,175	442,279	503,383
Eyeglasses	44,541	30,148	56,386	68,481	74,628	80,085	91,370	100,606	109,842
Psychology	0	0	0	0	0	22,773	25,050	27,555	30,288
Other Services*	38,997	185,204	71	0	0	0	0	0	0
Total Ancillary	$2,251,925	$2,757,113	$2,976,787	$4,176,445	$4,783,294	$5,646,586	$6238,065	$6,951,665	$7,665,492
Total Routine and Ancillary	$3,045,332	$3,764,746	$4,154,148	$5,700,836	$6,559,412	$7,354,165	$8,291,481	$9,211,462	$10,131,671

Note: The fiscal year for San Jose runs from July 1 through June 30.
*Includes speech therapy, occupational therapy, EKG, and other.

TABLE B.9

PERCENTAGE DISTRIBUTION OF MHSP MEDICARE COSTS
AND GROWTH RATES IN COSTS BY SERVICE TYPE,
SELECTED YEARS, FY85-FY93 SAN JOSE

	Percentage Distribution			Average Annual Growth Rate	
Service Type	FY85	FY90	FY93	FY85-FY90*	FY90-FY93*
Routine	26.1 %	23.2 %	24.3 %	15.3 %	12.3 %
Physical Therapy	0.0	0.0	0.0	--	--
Radiology	2.4	3.1	3.2	22.3	12.7
Laboratory	10.4	6.4	5.6	7.9	6.1
Pharmacy	25.6	30.2	29.5	20.9	9.9
Transportation	1.1	1.3	1.4	21.4	14.0
Dental Services	26.2	25.4	25.1	17.0	10.3
Audiology	0.0	0.0	0.0	--	--
Optometry	2.3	2.9	3.1	22.3	12.9
Podiatry	0.7	1.3	1.4	29.8	12.9
Dentures	2.5	4.9	5.0	30.8	11.2
Eyeglasses	1.5	1.1	1.1	11.7	10.5
Psychology	0.0	0.3	0.3		9.5
Other Services	1.3	0.0	0.0	--	--
Total Ancillary	73.9 %	76.8 %	75.7 %	18.4 %	10.2 %
Total Routine and Ancillary	100.0 %	100.0 %	100.0 %	17.6 %	10.7 %

*Growth rates shown are the average annual compounded rate of growth.

APPENDIX C

ADDITIONAL DATA ON MHSP SERVICE USE FROM THE SAMPLE OF MEDICAL RECORDS

ADDITIONAL DATA ON MHSP SERVICE USE FROM THE SAMPLE OF MEDICAL RECORDS

In this appendix, we present descriptive data obtained from medical records on the use of MHSP physician services, prescription drugs, lab services, and radiology services by MHSP patients. We also compare the use of physician services documented in the medical records with the physician visits captured in the MHSP claims submitted to HCFA. We do not conduct any comparisons in this section of MHSP users and nonusers. No data on prescription drug use were available for the MHSP nonuser sample defined in Chapter III, as prescription drugs are not covered by Medicare. Data on the use of laboratory and radiology services for the MHSP nonuser sample are available from the detailed Part B claims data we obtained for Baltimore and Milwaukee, but those data provide an incomplete picture of the laboratory and radiology services received. The Part B claims data were derived from claims processed by Part B carriers, and thus include laboratory and radiology services provided in physicians' offices and independent laboratories. They do not include services provided in outpatient hospital departments, however, as claims for those services are processed by the Medicare fiscal intermediaries rather than the carriers. Outpatient hospital claims are included in the MADRS data described in Chapter III, but those data do not include information on laboratory and radiology services. The analysis in this section is therefore descriptive and focuses on the service use data for MHSP users derived from the MHSP claims.

1. MHSP Physician Encounters

We identified the number of physician encounters documented in each medical record we reviewed. Encounters were defined as a visit with a physician or physician extender (i.e., nurse practitioner or physician assistant), but excluded podiatry or dental visits. Overall, the medical record data indicate that the beneficiaries in our sample had an average of 5.7 encounters with MHSP physicians in 1989. The average number of encounters ranged from 4.7 in Milwaukee to **5.8**

in Baltimore. In general, the number of physician encounters documented in the medical records was similar to the number indicated in the MHSP claims submitted to HCFA. For the four cities combined, the average number of physician encounters in the claims (5.8) was slightly higher than the average number documented in the medical records (5.7). The two data sources yielded similar encounter rates for each of the four cities.

2. Utilization of MHSP Prescription Drugs

In this section, we provide descriptive data on the use of prescribed medications by MHSP users and the types of medications provided to them. We did not count refills separately in our analysis, but counted the number of different types of prescribed medications, which included over-the-counter drugs when prescribed. Table C.1 gives a list of drugs we examined by category.

The vast majority of cases in the sample (95.7 percent) had at least one prescription during the year (Table C.2). The proportion of cases with at least one prescription during the year ranged from 89.4 percent in Milwaukee to 98.4 percent in Cincinnati. As shown above in Table IV.4, approximately one-fifth of the overall sample had one or two prescription medications in 1989, one-fifth had three or four prescriptions, one-fifth had five or six prescriptions, and nearly a quarter had between seven and ten prescriptions. About 11 percent of the sample had over 10 medications during the year.

We also calculated the average number of prescriptions per user and the average number of prescriptions per reviewed case. A user was defined as a patient or case that received one or more drugs in the specified category. The average per user statistic provided an estimate of the intensity of each drug type per person prescribed the drug, while the average per reviewed case provided a prevalence rate among the MHSP population. Overall, there were about 6.0 medications per user and an average of 5.7 medications per reviewed case. The average number of medications per user ranged from 5.5 in Milwaukee to 6.3 in Cincinnati.

TABLE C.l

DRUGS BY CATEGORY

Category	Drugs
Cardiac'	Anti-arrhythmics Anti-hypertensives Diuretics Anti-anginals Anticoagulants
Gastrointestinal	Histamine antagonist blockers Mucosal protectors Antacids
Arthritis	Nonsteroidal anti-inflammatory drugs Aspirin Methotrexate Gold compounds
Central Nervous System	Sedative-hypnotics Anti-convulsants Anti-depressants Cerebral stimulants Anti-anxiety agents
Pulmonary	Bronchodilators
Laxatives	
Hormonal Agents	
Anti-microbials	
Anti-diabetics	
Vitamins	
Eye, Ear, Nose, and Throat	

'Specific drugs that were not classified into a subcategory were categorized into the appropriate broad group.

TABLE C.2

DRUG UTILIZATION SUMMARY (1989)

Measure	Overall'	Baltimore	Cincinnati	Milwaukee	San Jose
Percent of cases with at least one prescription	95.7	96.5	98.4	89.4	96.0
Average number of prescriptions per **user**	6.0	6.1	6.3	5.5	5.8
Average number of prescriptions per reviewed case	**5.7**	**5.9**	**6.2**	**5.0**	**5.5**

'Weighted

As shown in Table C.3, cardiac drugs represented the greatest proportion of medications (27.6 percent), followed by arthritis medications (12.2 percent), and anti-microbials (6.9 percent). Other miscellaneous drugs constituted 17.0 percent of the total. Nearly two-thirds of the MHSP patients in the sample were prescribed cardiac medications during the year. Approximately one-half of the study group was prescribed arthritis medications and 55.3 percent were prescribed other miscellaneous medications. The percentages of patients prescribed gastrointestinal (GI); central nervous system (CNS); anti-microbials; vitamins; and eye, ear, nose, and throat (EENT) medications were similar, ranging from 23.7 percent to 27.8 percent.

The average number of medications per reviewed case and per user are also shown in Table C.3. The highest rate per user was for cardiac drugs, which was the only category where the average number of drugs per user exceeded two. Other categories with a high number of drugs per user included other miscellaneous medications (1.8), pulmonary drugs (1.7), and EENT medications (1.6). The average number of prescriptions per reviewed case was again highest for cardiac medications (1.6) followed by other miscellaneous medications (1.0). As shown in Table C.4, the pattern of prescription drug use did not vary substantially across cities. In each city, cardiac drugs were the drug type used by the largest percentage of patients.

TABLE C.3

OVERALL DRUG UTILIZATION BY MHSP PATIENTS (1989)

Drug Category	Percent of Prescriptions[1]	Total Number of Prescriptions	Number of Users	Users as a Percent of all Cases	Average Number of Prescriptions per Reviewed Case	Average Number of Prescriptions per User
Anti-diabetics	3.2	164	134	14.8	0.2	1.2
Anti-microbials	6.9	358	250	27.6	0.4	1.4
Arthritis medications	12.2	636	458	50.5	0.7	1.4
Cardiac drugs	27.6	1,436	599	66.0	1.6	2.4
CNS[2] Drugs	5.6	291	215	23.7	0.3	1.4
EENT[3] medications	6.7	351	225	24.8	0.4	1.6
GI[4] drugs	6.2	320	222	24.5	0.4	1.4
Hormonal agents	1.8	94	86	9.5	0.1	1.1
Laxatives	2.5	132	103	11.4	0.2	1.3
Other miscellaneous drugs	17.0	884	502	55.3	1.0	1.8
Pulmonary drugs	2.8	146	86	9.5	0.2	1.7
"Unreadable"[5] drugs	1.3	68	57	6.3	0.1	1.2
Vitamins	6.1	318	252	27.8	0.4	1.3
All drugs	100.0	5,197[7]	868	95.7	5.7	6.0

NOTE: Results are weighted.

[1]Includes over-the-counter drugs when prescribed.
[2]CNS - Central nervous system.
[3]EENT - Eye, ear, nose, and throat.
[4]GI - Gastrointestinal.
[5]Received prescriptions, but drug name was illegible in medical records.
[7] to rounding error, sum is off by one.

TABLE C.4

DRUG UTILIZATION BY MHSP CITY (1989)

Drug Category	Percent of Prescriptions within Site				Users as a Percent of all Cases within Site				Average Per Reviewed Case within Site				Average Per User within Site			
	B	C	M	S	B	C	M	S	B	C	M	S	B	C	M	S
Anti-diabetics	3.1	3.9	3.3	2.9	15.5	21.0	14.5	14.0	0.2	0.2	0.2	0.2	1.2	1.2	1.2	1.2
Anti-microbials	7.0	8.6	5.1	6.9	29.6	37.1	22.7	27.9	0.4	0.5	0.2	0.4	1.4	1.5	1.2	1.4
Arthritis medications	12.4	13.2	13.8	10.4	54.7	61.3	53.6	43.3	0.7	0.8	0.7	0.6	1.4	1.4	1.4	1.4
Cardiac drugs	28.8	26.7	25.0	24.5	70.4	70.2	65.5	63.7	1.7	1.6	1.2	1.4	2.5	2.4	2.1	2.2
CNS' drugs	5.3	5.0	5.7	6.7	25.1	26.6	20.9	25.6	0.3	0.3	0.3	0.4	1.3	1.2	1.5	1.5
EENT[2] medications	6.8	6.3	5.1	8.0	25.8	32.3	23.6	27.0	0.4	0.4	0.2	0.4	1.6	1.2	1.2	1.7
GI[3] drugs	6.0	4.0	5.1	7.7	25.8	18.5	19.1	31.2	0.4	0.2	0.2	0.4	1.4	1.4	1.5	1.4
Hormonal agents	1.4	1.3	2.8	2.8	8.1	7.3	13.6	14.4	0.1	0.1	0.1	0.2	1.1	1.1	1.1	1.1
Laxatives	2.4	3.2	1.8	2.7	11.5	16.9	9.1	12.1	0.1	0.2	0.1	0.2	1.3	1.2	1.1	1.3
Other misc. drugs	17.2	13.8	20.2	15.8	59.7	53.2	56.4	54.4	1.0	0.8	1.0	0.9	1.8	1.6	2.0	1.7
Pulmonary drugs	3.1	2.3	4.1	1.6	11.5	8.9	9.1	6.0	0.2	0.1	0.2	0.1	1.6	1.6	2.5	1.5
"Unreadable" drugs	1.3	2.4	5.0	1.8	6.9	13.7	2.7	7.0	0.1	0.2	0.0	0.1	1.1	1.1	1.0	1.5
Vitamins	5.2	9.3	7.6	8.1	25.3	47.6	31.8	35.3	0.3	0.6	0.4	0.4	1.2	1.2	1.3	1.3

[1]CNS - Central nervous system
[2]EENT - Eye, ear, nose, and throat
[3]GI - Gastrointestinal
[4]Drugs were prescribed but the drug name was illegible in the medical record

B = Baltimore
C = Cincinnati
M = Milwaukee
S = San Jose

3. Use of Lab and Radiology Services

Because the number of specific laboratory and radiology tests was large, to simplify the data collection and analysis we identified a subset of these services expected to be most heavily utilized by an elderly population. Utilization data were collected and analyzed for the laboratory and radiology services listed below:

Laboratory	Radiology
Complete Blood Count	X-ray
Electrolytes	Other Radiology'
Glucose Level	
Drug Serum Level	
Coagulation Studies	
Liver Function	
Renal Function	
Urinalysis	
Electrocardiogram	
Other Laboratory	

+Included more clinically sophisticated services such as computerized axial tomography, magnetic resonance imaging, and ultrasonography performed at the MHSP site or elsewhere as noted in the patient's MHSP medical record.

Tables were produced showing the proportion of users among reviewed cases, average number of services per user, and average number of services per reviewed case by service type and for each MHSP site. A user was defined as a patient or case receiving one or more of the specified services. The overall proportion of users among reviewed cases, and the average number of services per user and per reviewed case for all sites combined were also estimated.

About 87 **percent** of the MHSP study population had at least one laboratory study during 1989 and about 40 percent received some type of radiology study (Table C.5). The percentage of patients with at least one laboratory study ranged from 75.4 percent in Cincinnati to 89.4 percent in Baltimore. For radiology studies, the range was from 28.6 percent in Cincinnati to 48.2 percent in

TABLE C.5

PERCENTAGE OF MHSP REVIEWED CASES USING LABORATORY AND RADIOLOGY SERVICES OVERALL AND BY CITY (1989)

	Overall	Baltimore	Cincinnati	Milwaukee	San Jose
LABORATORY STUDIES					
Complete Blood Count	58.0 %	56.9 %	35.7 %	64.2 %	62.1 %
Electrolytes	68.2	69.8	46.8	65.9	67.9
Glucose	68.5	69.1	47.6	69.9	68.8
Drug Serum Level	7.2	8.5	4.8	5.7	4.0
Coagulation Studies	4.9	6.7	0.8	0.8	0.9
Liver Function	49.6	43.1	46.8	63.4	61.2
Renal Function	67.8	69.4	46.8	68.3	65.2
Urinalysis	43.3	42.9	31.0	32.5	51.3
EKG	25.1	24.2	23.0	10.6	38.4
Other	72.3	73.7	60.3	70.7	71.9
Total Laboratory	86.9	89.4	75.4	85.4	82.1
RADIOLOGY STUDIES					
X-Ray	31.3	29.5	27.0	29.3	42.4
Other	16.4	17.5	4.8	18.7	14.7
Total Radiology	39.7	38.5	28.6	40.7	48.2

NOTE: Percentages within site are calculated based on the number of users divided by the total number of reviewed cases within the site. Total represents users with one or more studies.

'Overall statistics are weighted.

San Jose. For the four cities combined, the following laboratory studies were each used by over half of the patients in the sample: complete blood count, electrolytes, glucose, and renal function.

The average number of laboratory services per case was 9.63 and the average per user was 11.09 (Table C.6) The catch-all "other" laboratory category reflected the highest average number of services per case (2.87) followed by glucose levels (1.42), electrolytes (1.20), and renal function tests (1.14). The average number of radiology studies per case were also examined. On average, there were 0.46 X-rays per case, and 0.22 other radiology studies. As shown above in Table IV.4, 34.5 percent of the sample had five or fewer laboratory studies during the year, 44.5 percent had between 6 and 14 laboratory studies, and 20.9 percent had 15 or more laboratory studies. Sixty percent of the sample had no radiology procedures during the year, 22.1 percent had one such procedure, 15.1 percent had two or three procedures, and 2.5 percent had four or more procedures.

Among beneficiaries with at least one laboratory study during the year, the average number of laboratory studies overall was 11.09. By specific study, we found that on average, there were 4.22 coagulation studies per user, 3.97 "other" laboratory studies per user, and 2.08 glucose levels per user. The remaining laboratory studies by category averaged less than two per user. Overall, there were 1.71 radiology studies, 1.48 X-rays, and 1.31 other radiology studies per user.

TABLE C.6

MEAN NUMBER OF LABORATORY AND RADIOLOGY SERVICES PER CASE AND PER USER OVERALL AND BY CITY (1989)

	OVERALL		BALTIMORE		CINCINNATI		MILWAUKEE		SAN JOSE	
	Mean Service3 Per **Case**	Mean Services Per User	Mean **Services** Per Case	Mean Services Per User	Mean Services Per Case	Mean Services Per **User**	Mean Services **Per Case**	Mean Services **Per User**	Mean **Services** Per Case	Mean Services **Per User**
LABORATORY STUDIES										
Complete Blood Count	**0.88**	1.52	0.91	1.59	0.52	1.47	**0.86**	1.34	**0.86**	**1.39**
Electrolytes	**1.20**	1.76	1.29	1.85	0.66	1.41	**1.07**	1.62	1.03	1.51
Glucose	1.42	2.08	1.43	2.07	1.29	2.72	**1.22**	1.74	**1.50**	2.18
Drug Serum Level	0.13	1.86	0.18	2.05	0.06	1.33	**0.07**	1.14	**0.04**	**1.11**
'Coagulation Studies	0.20	4.22	0.27	4.03	0.09	11.00	**0.06**	7.00	**0.08**	**9.00**
Liver Function	0.63	1.27	0.54	1 . 2 6	0.63	1.36	**0.88**	1.38	**0.73**	**1.19**
Renal 'Function	1.14	1.68	1.23	1.77	0.63	1.34	**1.10**	1.61	**0.91**	**1.39**
Urinalysis	0.86	1.98	0.86	2.00	0.67	2.18	**0.59**	1.82	**0.96**	**1.86**
EKG	0.30	1.17	0.28	1.16	0.29	1.28	**0.13**	1.23	**0.46**	**1.19**
Other	2.87	3.97	2.78	3.77	1.70	2.82	2.29	3.u	**3.63**	**5.06**
Total Laboratory	9.63	11.09	9.77	10.93	6.56	8.69	8.26	9.68	**10.19**	**12.40**
RADIOLOGY STUDIES										
X-Ray	0.46	1.48	0.44	1.48	0.40	1.50	0.35	1.19	**0.68**	**1.60**
Other	0.22	1.31	0.23	1.33	0.07	1.50	0.24	1.26	0.19	1.27
Total Radiology	0.68	1.71	0.67	1.74	0.48	1.67	0.59	1.44	0.87	1.80

NOTE: Mean number of services per case was calculated as the **number of services divided by the number of reviewed cases.**
Mean number of services per user was calculated as the number of services divided by the number of users.

Overall 'statistics are weighted.